Environmental
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U.S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

Date: June1, 2001
Refer to: ER2001-0471

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

SUBJECT: LOS ALAMOS NATIONAL LABORATORY PERMIT MODIFICATION REQUEST, JUNE 2001

Dear Mr. Young:

In accordance with 20 NMAC 4.1 Subparts IX and X, et. seq., the Department of Energy and the Los Alamos National Laboratory request a Class III permit modification to the Hazardous and Solid Waste Amendments Module VIII of the Resource Conservation and Recovery Act (RCRA) Hazardous Waste Facility permit.

The Class III permit modification requests the removal of 25 solid waste management units (SWMUs) from the permit. Nine of these units have been investigated and recommended for no further action (NFA) in a RCRA facility investigation report or a voluntary corrective action completion report. The remaining sixteen units are being proposed for NFA for the first time in this request as an attempt by NMED Hazardous Waste Bureau and Laboratory ER Project personnel to make the RCRA corrective action process more efficient. A Class III permit modification request is the appropriate vehicle to remove the 25 units from the permit.

Enclosed please find 3 copies of the permit modification request to remove 25 SWMUs from Module VIII of the Laboratory Hazardous Waste Facility Permit. Also enclosed is a certification statement signed by the designee owner and operator of the Laboratory.

Upon NMED's review of this submittal and finding it complete and in an acceptable format, the facility will publish in local newspapers a designated notice of the modification. As required, we will send notices to all persons on the facility mailing list, which will contain, at a minimum, all information as prescribed in 20 NMAC 4.1 Subpart IX, Subsection 901B.

If you have any further questions regarding the permit modification, please contact Dave McInroy at (505) 667-0819 or Gene Turner at (505) 667-5794.

Sincerely,

Julie A. Canepa, Program Manager
Environmental Restoration Project
Los Alamos National Laboratory

Sincerely,

Theodore J. Taylor, Project Manager
Department of Energy
Los Alamos Area Office

JC/TT/LN/vn

Enclosures: 1.Los Alamos National Laboratory Permit Modification Request, June 2001
2.Certification

Cy (w/enc.):
M. Boettner, E/ER, MS M992
J. Brown, S-7, MS F674
J. Davis, NMED-SWQB, MS J993
M. Kirsch, E/ET, MS M992
T. Longo, DOE-HQ, EM 453
D. McInroy, E/ER, MS M992
S. Martinez, E/ER, MS M707 (4 copies)
D. Neleigh, EPA, R.6, 6PD-N (2 copies)
L. Nonno, E/ER, MS M992
T. Taylor, LAA0, MS A316
T. Trujillo, DOE-AL, MS A906
G. Turner, LAA0, MS A316
J. White, ESH-19, MS K498
J. Parker, NMED-DOE OB, MS J993
S. Yanicak, NMED-DOE OB, MS J993
RPF, (ER Catalog # 2000-0363), MS M707

Cy (w/o enc.):
M. Baker, E/DO, MS J591
J. Bearzi, NMED-HRMB
S. Boliver, E/ER MS M992
J. Canepa, E/ER MS M992
A. Dorries, E/ER MS M992
D. Hickmott, E/ER MS M992
J. Hopkins, E/ER MS M992
J. Kieling, NMED-HRMB
J. McCann, E/ER MS M992
W. Neff, E/ER MS M992
A. Pratt, E/ER MS M992
K. West, E/ER MS M992
E/ER File, MS M992

A Department of Energy
Environmental Cleanup Program

LA-UR-01-2793
June 2001
ER2000-0363

Los Alamos National Laboratory Permit Modification Request

No Further Action Proposals

Volume II

Los Alamos
NATIONAL LABORATORY
Los Alamos, NM 87545

Produced by the Regulatory Compliance Focus Area

EXECUTIVE SUMMARY

The Los Alamos National Laboratory (the Laboratory) is requesting from the New Mexico Environment Department (NMED) Hazardous Waste Bureau a Class III permit modification for removal of 25 solid waste management units (SWMUs) from Module VIII of the Laboratory's Hazardous Waste Facility Permit.

The Laboratory ER Project has proposed 9 of these 25 SWMUs previously via a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan, RFI report, or a voluntary corrective action completion report. The remaining 16 SWMUs (marked with an asterisk [*]) are being proposed for the first time in this request for permit modification as an attempt by NMED Hazardous Waste Bureau and Laboratory ER Project personnel to make the permit modification process more efficient.

SWMUs are proposed for removal from Module VIII based on one of the following five no further action (NFA) criteria. The SWMUs currently being requested for removal from Module VIII are listed after their respective criterion.

NFA Criterion 1. The site does not exist; is a duplicate of another site; cannot be located, or is located within another site, and has been or will be investigated as part of that site.

SWMU 01-001(m), a septic tank (nonexistent)

NFA Criterion 2. The site was never used for the management (that is, generation, treatment, storage or disposal) of RCRA solid or hazardous wastes and/or constituents.

SWMU 03-046, an active aboveground wastewater treatment tank

SWMU 15-010(c), an active storm drainline and outfall

SWMU 16-026(a2)*, an active storm outfall and associated drainline

SWMUs 16-026(d2, e2, f2, g2, h, k, x)* and 16-030(b, e, f)*, ten outfalls and their associated drainlines

SWMU 16-026(t)*, an active storm outfall and associated drainline

SWMU 20-003(a), a former firing site control building

NFA Criterion 3. The site is not known or suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment. The term "release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment.

SWMU 08-005, a former incubator used for growing crystals

SWMU C-08-010, the site of a former drum storage area

SWMUs 16-025(e2, f2, h2)*, three areas of potential soil contamination from three former high-explosives storage buildings

NFA Criterion 4. The site is regulated under another state and/or federal authority. If the site is known or suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment, it has been or will be investigated and/or remediated in accordance with the applicable state and/or federal regulations.

SWMU 15-014(l), an active National Pollutant Discharge Elimination System (NPDES)-permitted outfall

NFA Criterion 5. The site was characterized or remediated in accordance with applicable state and/or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

SWMUs 00-011(a,e), two former mortar impact areas

SWMU 14-003*, a former burn area for high explosive debris

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1.0 INTRODUCTION

The Los Alamos National Laboratory (the Laboratory) is requesting from the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) (formerly the Hazardous and Radioactive Materials Bureau [HRMB]) a Class III permit modification for the removal of 25 solid waste management units (SWMUs) from Module VIII of the Laboratory's Hazardous Waste Facility Permit. The proposals for the removal of these 25 units are based on field investigations, archival investigations, and/or site cleanups performed by the Laboratory's Environmental Restoration (ER) Project.

The definition of a solid waste management unit used in this request for permit modification is from Module VIII, "Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA," of the Laboratory's Hazardous Waste Facility Permit. This definition conforms to the SWMU definition presented in proposed Subpart S of the Resource Conservation and Recovery Act (RCRA) regulations in 40 CFR Part 264 (Federal Register, Vol. 55, No. 145, July 27, 1990) and was used to define SWMUs at the Laboratory. Thus, SWMUs are "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically released."

Each SWMU proposed in this request for permit modification has been evaluated for potential risks to human health and the ecosystem. Additionally, an assessment has been made of applicable regulations and standards that may be appropriate to each site. Applicable regulations and standards investigated include surface water standards, groundwater standards, air emissions requirements, polychlorinated biphenyl (PCB) management requirements, and underground storage tank (UST) regulations (when applicable). The Laboratory's ER Project has determined that each of the no further action (NFA) proposals for permit modification presented in this request is valid based on human health and ecological evaluations, as well as all other applicable regulations and standards. Documentation supporting each proposed modification is attached.

The ER Project has proposed 9 of the 25 SWMUs in this request previously via a RCRA facility investigation (RFI) work plan, RFI report, or a voluntary corrective action (VCA) completion report. Those 9 SWMUs are 00-011(a,e), 01-001(m), 03-046, 08-005, C-08-010, 15-010(c), 15-014(l), and 20-003(a). The remaining 16 SWMUs are being proposed for the first time in this request for permit modification as an attempt by HWB and Laboratory ER Project personnel to make the permit modification process more efficient. The 16 SWMUs are 14-003, 16-025(e2, f2, h2), 16-026(a2), 16-026(d2, e2, f2, g2, h, k, x), 16-030(b, e, f), and 16-026(t).

1.1 NFA Criteria

Within the Laboratory's ER Project, there are five criteria for proposing NFA for SWMUs. The NMED-HWB and the Laboratory have agreed upon these criteria for determining NFA. The five NFA criteria are listed below.

NFA Criterion 1. The site does not exist; is a duplicate of another site; cannot be located, or is located within another site, and has been or will be investigated as part of that site.

NFA Criterion 2. The site was never used for the management (that is, generation, treatment, storage or disposal) of RCRA solid or hazardous wastes and/or constituents.

NFA Criterion 3. The site is not known or suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment. The term "release" means any spilling, leaking, pouring,

emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment.

NFA Criterion 4. The site is regulated under another state and/or federal authority. If the site is known or suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment, it has been or will be investigated and/or remediated in accordance with the applicable state and/or federal regulations.

NFA Criterion 5. The site was characterized or remediated in accordance with applicable state and/or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

An administrative NFA proposal based on Criteria 1 through 3 is supported by acceptable knowledge of process and/or documented information that indicates that there has not been a release at the site, thus precluding the need for characterization and/or remediation.

An NFA proposal based on Criterion 4 is supported by acceptable knowledge of process and/or documented information that confirms that if there was a release, the site was adequately characterized and/or remediated in accordance with a regulatory authority other than that which oversees RCRA corrective action. NFA Criterion 4 is based on the fact that cleanup levels prescribed under other regulatory authorities, such as the EPA Toxic Substances Control Act (TSCA) or NMED UST regulations, were developed to incorporate human health and ecological risk considerations. Therefore, SWMUs managed in accordance with other regulatory programs normally do not require subsequent action under RCRA corrective action. However, any of the above five criteria may be supported with confirmatory sampling when necessary.

An NFA proposal based on Criterion 5 is supported by data and acceptable knowledge of process and/or documented information that confirms that the site was adequately characterized and/or remediated in accordance with the Hazardous and Solid Waste Amendments of 1984 (HSWA) corrective action process.

1.2 Applicability of the Evaluation of Human Health Risk, Ecological Risk, and Other Applicable Regulations and Standards to NFA Criteria 1 Through 4

NFA proposals based on administrative NFA Criteria 1 through 3 require adequate supporting documentation to establish justification for NFA. In certain cases, Criteria 1, 2, and 3 NFA proposals may require verification samples. However, Criteria 1, 2, and 3 NFA proposals generally do not require evaluations for risks to human health or the ecosystem, or an evaluation of the applicability of other regulations and standards.

An NFA proposal based on Criterion 4 (the site was remediated in accordance with another state and/or federal authority) indicates that these SWMUs are/were characterized and managed in accordance with the requirements specified in other applicable regulations and/or standards. Other applicable regulations and standards include surface water standards, groundwater standards, air emission standards, UST regulations, and PCB regulations. Human health and ecological risk evaluations are inherent in (or addressed by) the cleanup levels established by other regulatory authorities, such as TSCA requirements or NMED UST Bureau regulations. Such requirements or regulations specify the human health and ecologically based cleanup levels that must be met (in the event of a release) to achieve NFA. Criterion 4 SWMUs with a confirmed release require documentation confirming that the release was cleaned to the requirements and/or standards of the applicable regulatory authority.

1.3 Variation from the Outline for HSWA Permit Modification Request Provided in Section II.B.4.a(4)(a) of the March 3, 1998, HRMB Document, RCRA Permits Management Program Document Requirement Guide

As discussed in Section 1.2, environmental sampling and analyses and site assessments (human health, ecological, and other applicable assessments such as surface water, groundwater, UST, etc.) do not apply to SWMUs being proposed for NFA under Criteria 1 through 4. Therefore, on May 4, 1999, the ER Project negotiated an agreement with the NMED-HWB to vary from the outline for a HSWA Permit Modification Request provided in Section II.B.4a(4)(a) of the March 1998 HRMB document, RCRA Permits Management Program Document Requirement Guide (NMED 1998, 57897). Documentation of the negotiation and the revised outline for Criteria 1 through 4 SWMUs being requested for release from Module VIII of the Laboratory's Hazardous Waste Facility Permit are included as Appendix E of this document.

1.4 Organization of this Request

Text for each SWMU in this permit modification request is separated by an indexed tab labeled with its SWMU number. Section X.1 is a brief summary of the SWMU. Section X.2 contains a description of the SWMU (including site maps, if applicable) and its operational history. The text for each SWMU is based on an RFI work plan, RFI report, or VCA completion report, as applicable to that SWMU. The current and future land use of each SWMU is contained in Section X.3. Section X.4 (X.7 for Criterion 5 SWMUs) summarizes the justification for the NFA decision and states the specific NFA criterion under which each SWMU is being proposed for permit modification. The supporting documentation for each SWMU is listed in Section X.5 (X.8 for Criterion 5 SWMUs) and attached at the end of each SWMU write-up. (In order to avoid unnecessary duplication, attachments that are common to more than one SWMU are included in Appendix D.) For some attachments, the information applicable to support NFA has been highlighted or otherwise marked to point the reader to the exact location that was referenced in the SWMU discussion. When only a small portion of a document is applicable, only the relevant pages have been included.

Section X.6 (X.9 for Criterion 5 SWMUs) provides the reference(s) on which the text of the request for permit modification for a particular SWMU is based. Lastly, Section X.7 (X.10 for Criterion 5 SWMUs) provides a history of the regulatory deliverables for each SWMU.

For Criterion 5 SWMUs, Section X.4 provides a description of investigation activities for each SWMU; Section X.5 provides a description of the site conceptual model; and Section X.6 provides a description of the applicable site assessments, such as human health or ecological screening assessments, conducted for the SWMU.

Appendix A includes a list of acronyms and a glossary of terms used in this request. Appendix B includes the Laboratory's requested modifications to Tables A, B, and C of Module VIII of the Laboratory's Hazardous Waste Facility Permit. The date of the permit modification request is indicated next to the number of the unit proposed for modification. Appendix C includes the Proposed Tables A, B, and C of Module VIII. These tables represent Module VIII upon final approval of all NFA requests to date. Records pertaining to this modification request are kept on file at the ER Project's Records Processing Facility. Appendix D contains attachments common to more than one SWMU. Appendix E contains the supporting documentation for varying from the outline for HSWA Permit Modification Request provided in Section II.B.4.a(4)(a) of the March 1998 HRMB document, RCRA Permits Management Program Document Requirement Guide (NMED 1998, 57897).

REFERENCE

NMED (New Mexico Environment Department), 1998. “RPMP Document Requirement Guide,” Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. (NMED 1998, 57897)

2.0 SWMUs 00-011(a,e) FORMER MORTAR IMPACT AREAS

2.1 Summary

SWMUs 00-011(a,e) are former mortar impact areas located in Rendija Canyon within a DOE land parcel slated for transfer to Los Alamos County by November of 2007. The RFI for these SWMUs included remediation and confirmatory sampling by the ER Project. Remediation activities were conducted in accordance with applicable state/federal regulations. Confirmatory sampling verified that residual contamination is at concentrations that do not pose an unacceptable level of risk under current and projected future land use. The US Environmental Protection Agency (EPA) Region 6 RCRA Permits Branch approved the March 30, 1994, RFI phase report for these SWMUs in a letter dated December 9, 1994. SWMUs 00-011(a,e) are being proposed for NFA under Criterion 5 (the sites were remediated in accordance with state and/or federal regulations).

2.2 Description and Operational History

2.2.1 Site Description

SWMU 00-011(a)

The former site of SWMU 00-011(a) is located in Rendija Canyon, approximately 0.4 mi east of the Sportsmen's Club firing range (Figure 2.2-1). Before the RFI began, the SWMU was limited to a 7-acre area within an existing barbed-wire fence marked at frequent intervals with "no trespassing" signs. However, explosives ordnance disposal surveys conducted during 1993 found that the impact area extended south and east, well beyond the fence (Figure 2.2-2), increasing the area of the SWMU to approximately 28.5 acres. This site lies entirely within US Department of Energy (DOE) property.

SWMU 00-011(e)

The former site of SWMU 00-011(e) is located in Thirty-Seven-Millimeter Canyon, a tributary of Rendija Canyon, approximately 0.4 mi north-northeast of the Sportsmen's Club firing range (Figure 2.2-1). This site, which includes approximately 14 acres, extends along Thirty-Seven-Millimeter Canyon to the top of a cliff face formed from Bandelier Tuff. Most of this site is located on US Forest Service Property with a small segment at its southern boundary located on DOE property (Figure 2.2-1).

2.2.2 Operational History

Little archival information exists on the operational history of the mortar impact areas in Rendija Canyon. Rendija Canyon and its tributary, Thirty-Seven-Millimeter Canyon, were two of the six Los Alamos area canyons used by the US Army for military "activities" (i.e., training) from 1944 to 1948 (DOE 1987, 08660)(Attachment A). Additionally, Thirty-Seven-Millimeter Canyon may have been used for 37-mm tank target practice by the Laboratory's Protective Force (Lojek 1991, 01905) (Attachment B). Due to the presence of unexploded ordnance, fences posted with warning signs were placed around both SWMUs in the early 1960s.

Materials recovered during the 1993 ordnance sweep of SWMU 00-011(a) included various sizes of mortar rounds (including two live rounds that were destroyed). Materials recovered during the sweep of SWMU 00-011(e) included 20- and 37-mm rounds, armor-piercing rounds, and bullet fragments.

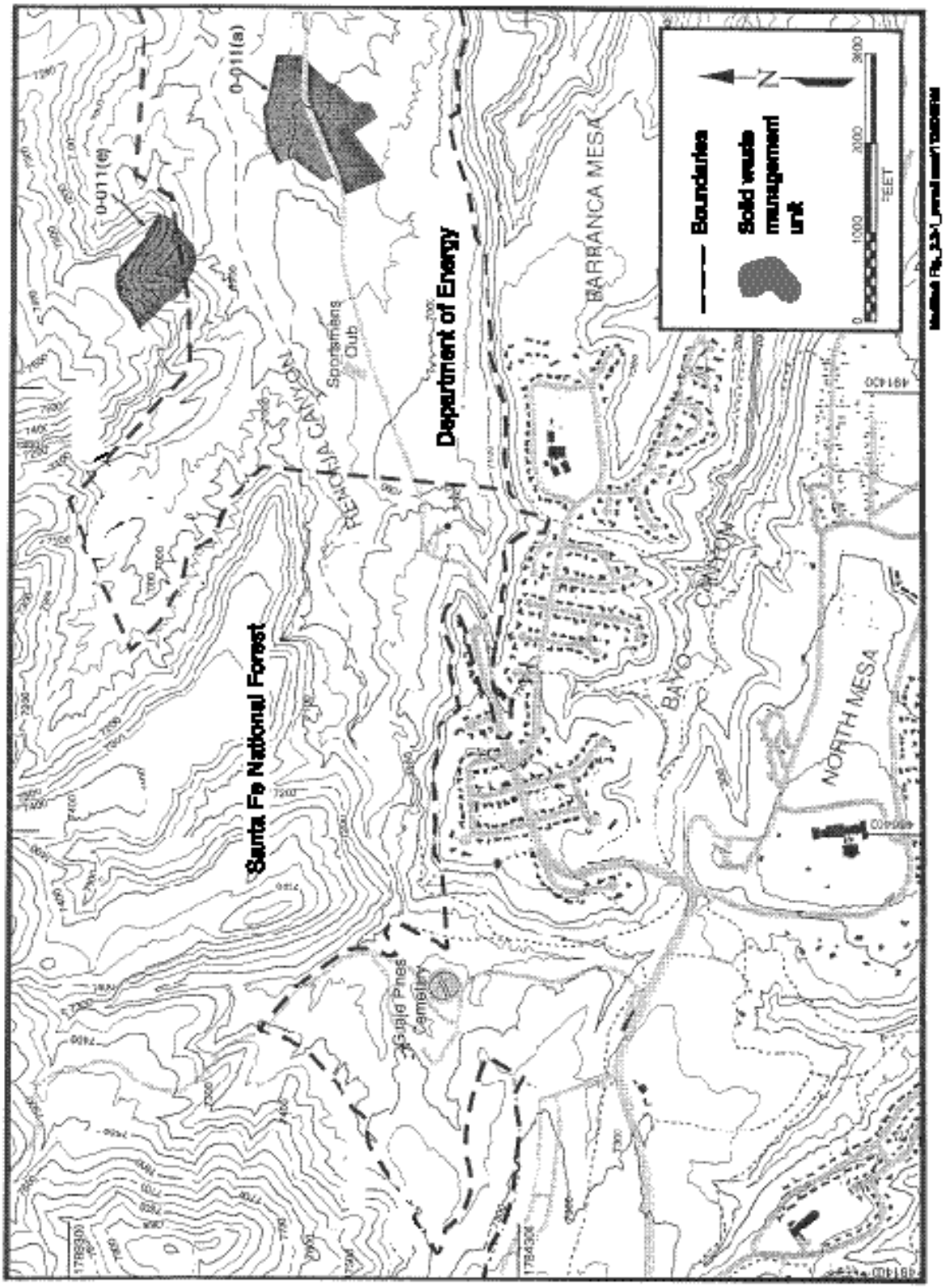

Figure 2.2-1. Locations of SWMUs 00-011(a,e)

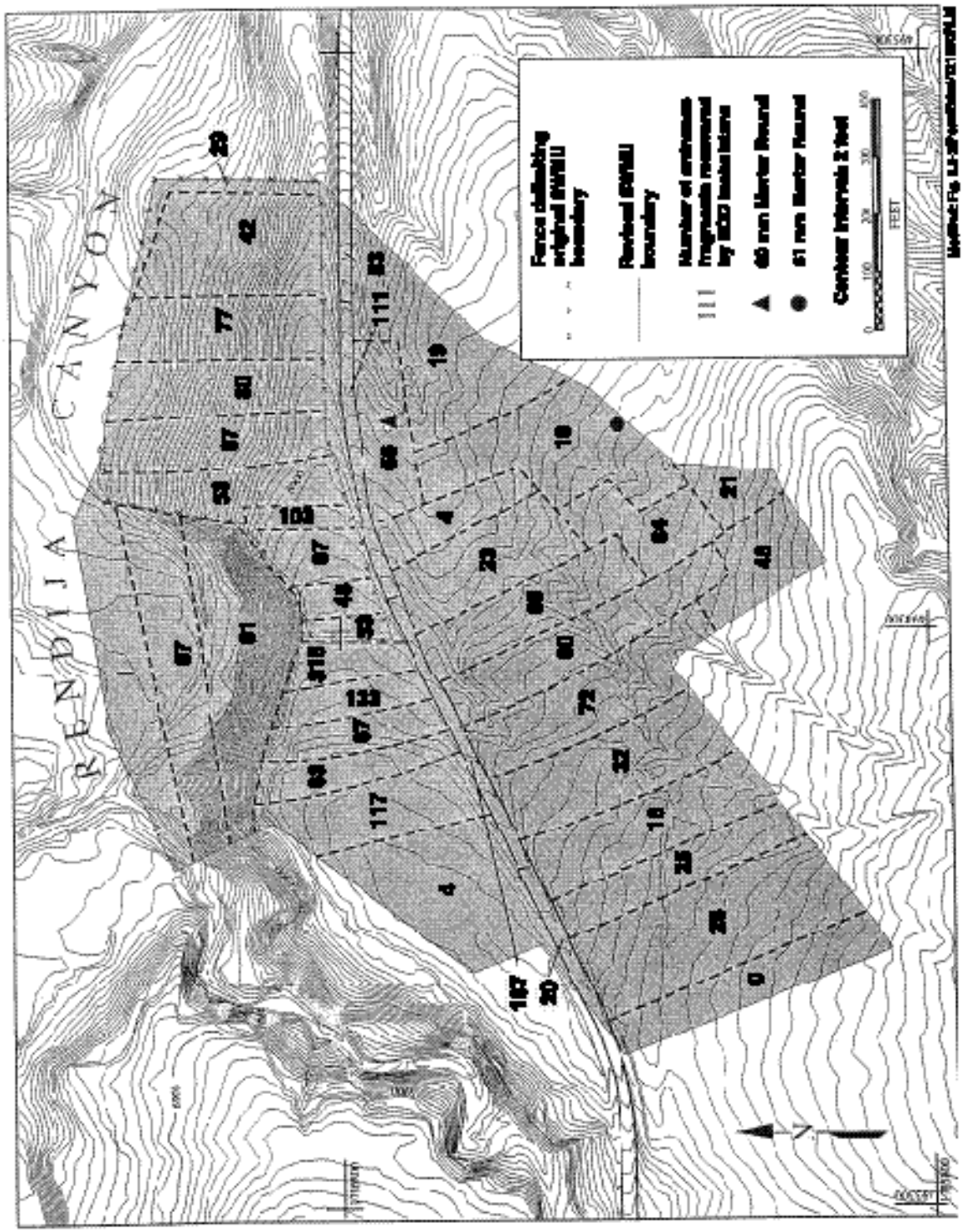

Figure 2.3-2. Map of SWMU 00-011(a) showing the original (fenced) boundary and final boundary after ordnance search was completed. Dashed line delineates EOD team area subdivisions.

2.3 Land Use

2.3.1 Current

SWMU 00-011(a) is located on undeveloped DOE land in Rendija Canyon (Figure 2.2-1), bordered on the north and east by the Santa Fe National Forest, which is used for a variety of recreational purposes. SWMU 00-011(e) is located mainly on US Forest Service land (Santa Fe National Forest) with a small portion of the site located on DOE property (Figure 2.2-1).

Public access is not restricted to either of these SWMUs and visitors to the area use Rendija Canyon for a variety of recreational activities. Due to the presence of unexploded ordnance, fences approximately 4 ft in height and posted with warning signs were placed around both SWMUs in the early 1960s. Although the posted fencing discouraged trespassing, it could not prevent intruders from trespassing into the posted and fenced areas. The fence designating DOE property at SWMU 00-011(a) is still in place; however, it has been cut at one location to allow vehicle access. Only remnants of the fence at SWMU 00-011(e) remain.

2.3.2 Future/Proposed

SWMUs 00-011(a,e) are included as part of the Rendija Canyon Parcel, one of the ten land parcels slated for transfer (by November 2007) from the DOE to the County of Los Alamos or to the Secretary of the Interior in trust for the Pueblo of San Ildefonso. The Rendija Canyon Parcel, consisting of approximately 910 acres, will be transferred to Los Alamos County. The county anticipates using the Rendija Canyon Parcel for cultural and environmental preservation or for residential use, but has not yet determined which of the two uses will be selected for the specific acreage that includes SWMUs 00-011(a,e). (LANL 1999, 63037, p. 42)(Attachment C).

2.4 Investigation Activities

2.4.1 Summary

A complete and detailed discussion of all investigation activities conducted for SWMUs 00-011(a,e) is presented in the RFI phase report for Operable Unit (OU) 1071 ordnance impact areas (Environmental Restoration Project 1994, 38621), submitted to EPA Region 6 on March 30, 1994, and approved on December 9, 1994. A summary of those investigation activities is presented in Sections 2.4.1 through 2.4.3 of this request for permit modification.

2.4.2 Investigation #1: RFI Investigation of SWMU 00-011(a,e)

The RFI for SWMUs 00-011(a,e) was completed in September 1993. It was designed to ensure that all unexploded ordnance (UXO) and ordnance fragments were located and removed and to determine if any residual contamination from the ordnance remained in the area encompassed by the SWMUs. A team of certified master explosive ordnance disposal (EOD) technicians conducted a detailed surface and subsurface sweep at each SWMU (inside and outside the fenced areas). The sites were systematically scanned with ordnance detection equipment following standard military ordnance clearance procedures. The number of ordnance fragments found in each area of each SWMU was recorded to develop a data set on the distribution and density of the fragments.

Following the EOD sweep, licensed land surveyors marked a 100-ft square grid on the ground surface at each SWMU. The grid provided location reference points for the subsequent geophysical survey of each SWMU. The surveyors also mapped the boundaries of each SWMU.

Following the land survey, a team of geophysicists conducted a survey of each SWMU using magnetic and electromagnetic survey instruments. The geophysical surveys identified several additional ordnance fragments and provided a quality control that ensured that the SWMUs were cleared of all UXO and ordnance fragments (1 in. or more in diameter). Additionally, the EOD team investigated each geophysical anomaly identified in each geophysical survey.

Once all UXO and ordnance fragments were removed, a site map was prepared showing surface soils, drainage channels within the sites, and locations from which ordnance fragments were removed. The maps were used to identify areas where any residual contaminants from the ordnance most likely would be concentrated and to select topographically biased sampling locations with the highest likelihood of contaminant occurrence (if present). After the field team identified these areas, the surveyors precisely located sample collection points.

All samples were collected following ER Project procedures for the collection of surface soil samples. Detailed information on the type and characteristics of the soil was also gathered.

2.4.2.1 Ordnance Detection

The duties of the EOD team were to detect, excavate, and remove all UXO and, within the detection capability of their equipment, to remove all ordnance fragments 1 in. in diameter or larger to a depth of 1 m. The depth was selected based on the types of ordnance at each site, their known maximum depths of penetration in sediments and soils, and the surface geologic processes (burial and erosion) at the impact sites over the past 50 years. It was determined that a depth of 1 m would represent a highly conservative estimate of the maximum depth at which UXO or ordnance fragments would occur at these sites. (The fact that no fragments were found at either site below a depth of 0.5 m substantiates this estimation.)

The EOD team consisted of UXO-trained personnel, including personnel certified as master EOD technicians under the requirements of the US Army Corps of Engineers and the US Army Toxic and Hazardous Materials Agency.

At each site, lanes were delineated with parallel ropes. Lane orientation was determined by terrain, with lanes oriented to allow EOD personnel to perform work in the safest and most efficient manner. The last lane of a series was marked with flags so that no confusion would exist between areas that had been swept and those that were not. Lanes were swept up one side and down the other in 5-ft overlapping arcs. Lane layout and instrument movement paths were designed to ensure that every square foot of each SWMU was surveyed.

Magnetometers (with the capability of readily locating UXO at the 1-m target depth) and metal detectors were moved across each lane to completely sweep the entire ground surface. Within each lane, the number of recovered pieces of ordnance was recorded. No UXO or ordnance fragments were found at either site below a depth of approximately 0.5 m.

The surveys were complicated by the discovery that sizeable portions of Bandelier Tuff have significant magnetic properties. Thus, buried cobbles and boulders frequently gave false positive readings for magnetic anomalies. Nonetheless, each anomaly was checked to verify the presence or absence of ordnance.

Upon completion of the EOD sweep and initial clearance of ordnance, a geophysical survey was conducted to verify that all buried UXO and ordnance fragments had been located. EOD personnel subsequently investigated all geophysical anomalies identified by geophysics personnel to distinguish actual ordinance fragments from rocks or other anomalies.

SWMU 00-011(a)

Because ordnance fragments were found outside the southwest corner of the fence at SWMU 00-011(a), the ordnance search was expanded beyond the fence (Figure 2.2-2). To determine the new SWMU boundary, new lanes were added until no ordnance fragments were found in the outermost lane and no ordnance fragments were found within 50 ft in all directions of the fragments farthest out. The innermost edge of the outermost lane in which no ordnance fragments were found was considered the final boundary. This procedure added approximately 21.5 acres to the 7 acres that originally defined the SWMU. The land survey team subsequently surveyed the expanded acreage to accurately determine coordinates.

Two live HE mortar rounds were found and detonated. Detonation followed EOD and Laboratory standard procedures and occurred without incident. The ordnance fragments resulting from the detonations were recovered and removed from the site. Other materials recovered during the ordnance sweep of SWMU 00-011(a) included approximately 2400 ordnance fragments and approximately 3 times as much scrap material. The locations of the recovered fragments indicated that there had been more than one firing point and that the firing points were located on the south side of the canyon floor.

SWMU 00-011(e)

The area within the fence at SWMU 00-011(e), the cliff, and the mesa top to a line approximately 100 m from the cliff edge were surveyed for UXO and ordnance fragments. Lanes were laid out to guide the survey, except for the cliff face where complete coverage was visually controlled by features on the cliff face. Because of the rough terrain, the EOD team had to rappel down the cliff face to conduct the ordnance sweep of the cliff.

No live HE mortar rounds were found at this site. Materials recovered were primarily fragments from 37-mm rounds (nose cones and fusings). Fragments of armor-piercing rounds, 20-mm rounds, and expended bullets (small caliber, both military and civilian) were also recovered. A total of 350 pieces of ordnance were recovered.

2.4.2.2 Nonsampling Data Collection

Nonsampling data collection consisted of field screening and geographical survey results. All samples at both SWMUs were screened for gross alpha and beta activity using a Berthold low-level counter and for gamma activity using a deep-well counter. All screening results were uniformly below detection limits.

Geophysical Survey

Geophysical surveys are not typically conducted as part of the cleanup of ordnance impact areas at US Department of Defense facilities. However, to ensure that all UXO and ordnance fragments 1 in. in diameter or larger had been located, the ER Project conducted magnetic geophysical surveys at each SWMU. The investigating field team added this measure to ensure that all UXO and ordnance fragments had been located.

The magnetic geophysical surveys consisted of two parts: (1) collecting discrete data points on a 5-ft grid spacing and (2) slowly and continuously sweeping an area to locate smaller objects. The discrete data points resulted in a single gradient value recorded for each position.

A land survey team defined a coordinate system marked on 100-ft increments. The markers placed in the field served as registration points for data collection. To ensure complete coverage of the sites, each 100-ft by 100-ft segment was subdivided into a series of 10-ft-wide lanes marked by ropes. Each rope was 100 ft

in length with flags marking every 10-ft increment (Figure 2.4-1). A continuous digital sweep designed to bring the sensor within 1 ft of all surface positions was conducted simultaneously with digital data acquisition on a 5-ft interval. Working within a lane, the operator walked perpendicular to the long axis of the lane, sweeping the instrument back and forth. Additional digital data points were recorded at 5-ft intervals within the lane.

The geophysics team did not survey areas of rock outcrop and cliff. For areas where the rope grid could not be used (including ditches, steep terrain, and site borders), the survey was visually controlled. All geophysical anomalies were flagged for future investigation by the EOD team.

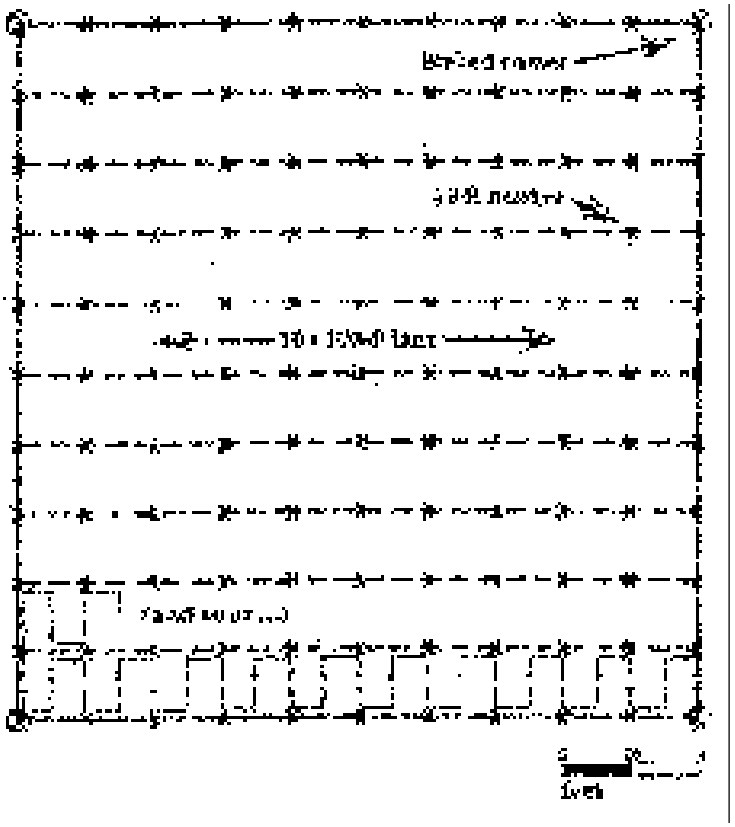

Figure 2.4-1. Geophysics team ordnance search pattern

SWMU 00-011(a)

The geophysical survey for SWMU 00-011(a) identified 640 anomalies below ground surface, all of which were investigated by the EOD team. Of the 640 anomalies, 132 were found to be ordnance fragments.

SWMU 00-011(e)

The geophysical survey for SWMU 00-011(e) identified 48 anomalies below ground surface, all of which were investigated by the EOD team. Of the 48 anomalies, 27 were found to be ordnance fragments.

2.4.2.3 Sampling Data and Collection

Nineteen soil/sediment samples were collected from SWMU 00-011(a) on September 23, 1993, and nine soil/sediment samples were collected from SWMU 00-011(e) on September 24, 1993. Sample locations

were selected from sediment retention locations within the drainage channels that drained the areas of high fragment concentration [SWMU 00-011(a): Figure 2.4-2; SWMU 00-011(e): Figure 2.4-3].

Samples were collected from surface (0–6 in.) depths using the spade and scoop technique. All samples were screened for radiological contamination as described in Section 2.4.2.2 of this request. The radiological screening yielded results at or below background levels.

Samples were submitted to the Chemical Science and Technology group CST-9 [formerly Environmental Management (EM-9)] for inorganic analyses and to the International Technology Analytical Services, St. Louis, Missouri, for HE analyses. CST-9 followed SW 846 procedures for inductively coupled plasma emission spectroscopy (ICPES) (most inorganic chemicals), flame atomic absorption (silver), cold vaporization atomic absorption (mercury), and electrothermal vaporization atomic absorption (arsenic and selenium). International Technology Analytical Services, St. Louis, Missouri, used high-performance liquid chromatography, a modified SW 846 Method 8330 procedure. Analyses were conducted for the following compounds: 1,3-dinitrobenzene; 2,4-dinitrotoluene; 2, 6-dinitrotoluene; HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine); nitrobenzene; m-nitrotoluene; o-nitrotoluene; p-nitrotoluene; RDX (cyclotrimethylenetrinitramine); tetryl (methy-2,4,5-trinitrophenylnitramine); 1,3,5-trinitobenzene; and 2,4,6-trinitrotoluene.

2.4.2.4 Data Gaps

No data gaps were associated with the RFI of SWMUs 00-011(a,e). Sufficient data were collected to adequately determine nature and extent of contamination.

2.4.2.5 Results and Conclusions

The analytical sampling results for SWMU 00-011(a) are provided in Table 2.4-1 and those for SWMU 00-011(e) are provided in Table 2.4-2.

The RFI found that all metals detected at both SWMUs either were detected below or had detection limits below 1994 maximum background concentrations. No high explosives (HE) (or HE byproduct) were detected in any sample at either SWMU.

Using current background values (BVs) for sediment, several inorganic chemicals were detected slightly above BVs at SWMU 00-011(a). Of 19 samples, barium is above its sediment BV of 127 mg/kg in 3 samples (1 of which is a duplicate); cobalt, above its sediment BV of 4.73 mg/kg in 15 samples; chromium, above its sediment BV of 10.5 mg/kg in 3 samples; iron, above its sediment BV of 13,800 mg/kg in 2 samples; lead, above its sediment BV of 19.7 mg/kg in 1 sample; manganese, above its sediment BV of 543 mg/kg in 1 sample; nickel, above its sediment BV of 9.38 mg/kg in 1 sample; selenium, above its sediment BV of 0.3 mg/kg in 14 samples; and vanadium, above its sediment BV of 19.7 mg/kg in 5 samples.

Using current BVs at SWMU 00-011(e), zinc is the only metal detected above its sediment BV of 60.2, at a frequency of 1 detection in 9 samples.

All inorganic chemicals detected above current BVs are well below Laboratory screening action levels (SALs) and are addressed in detail in the screening assessment Sections 2.6.2.1 (Human Health) and 2.6.2.2 (Ecological) of this request for permit modification.

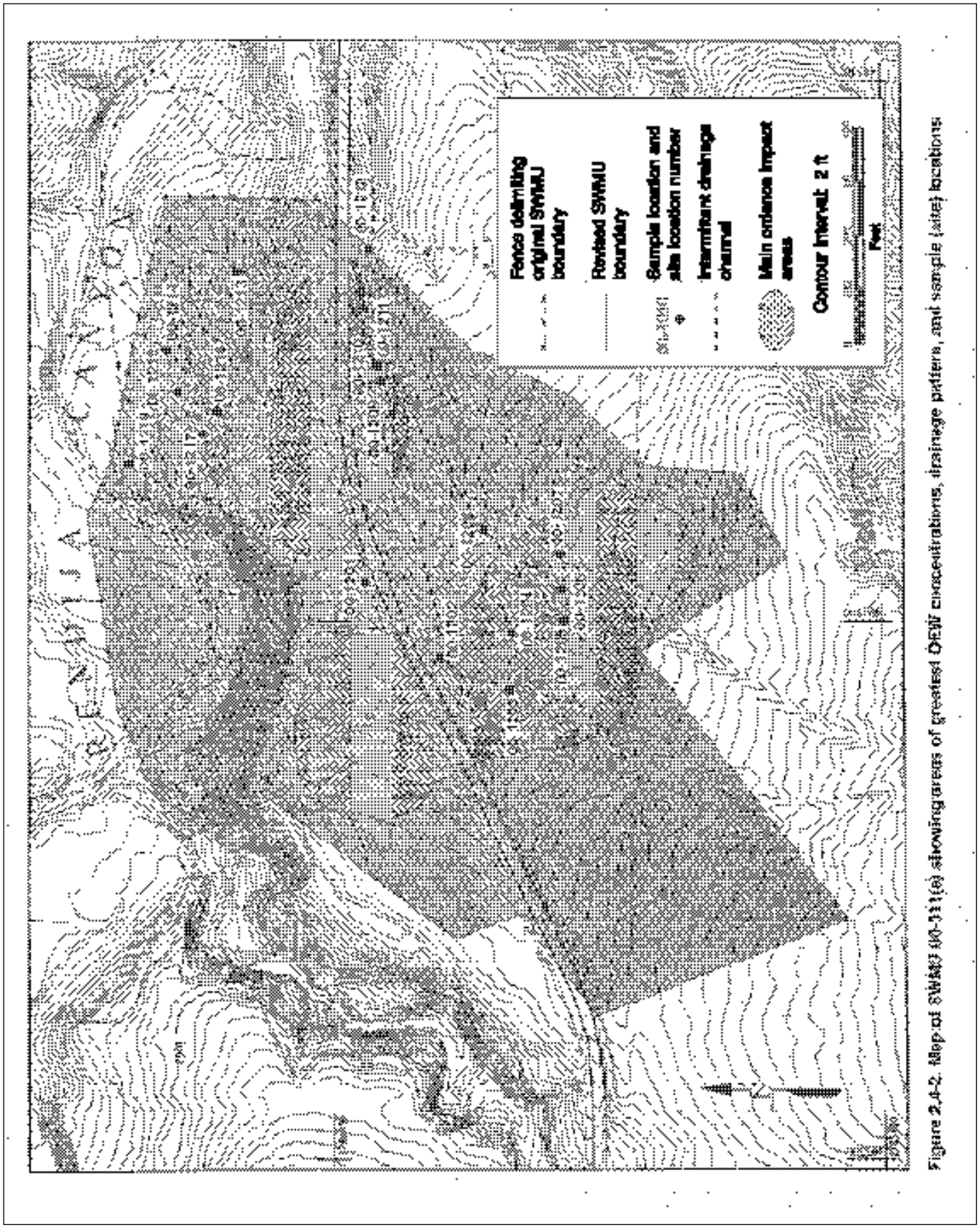

Figure 2.4-2. Map of SWMU 00-011(a) showing areas of greatest DEW concentrations, drainage pattern, and sample (site) locations

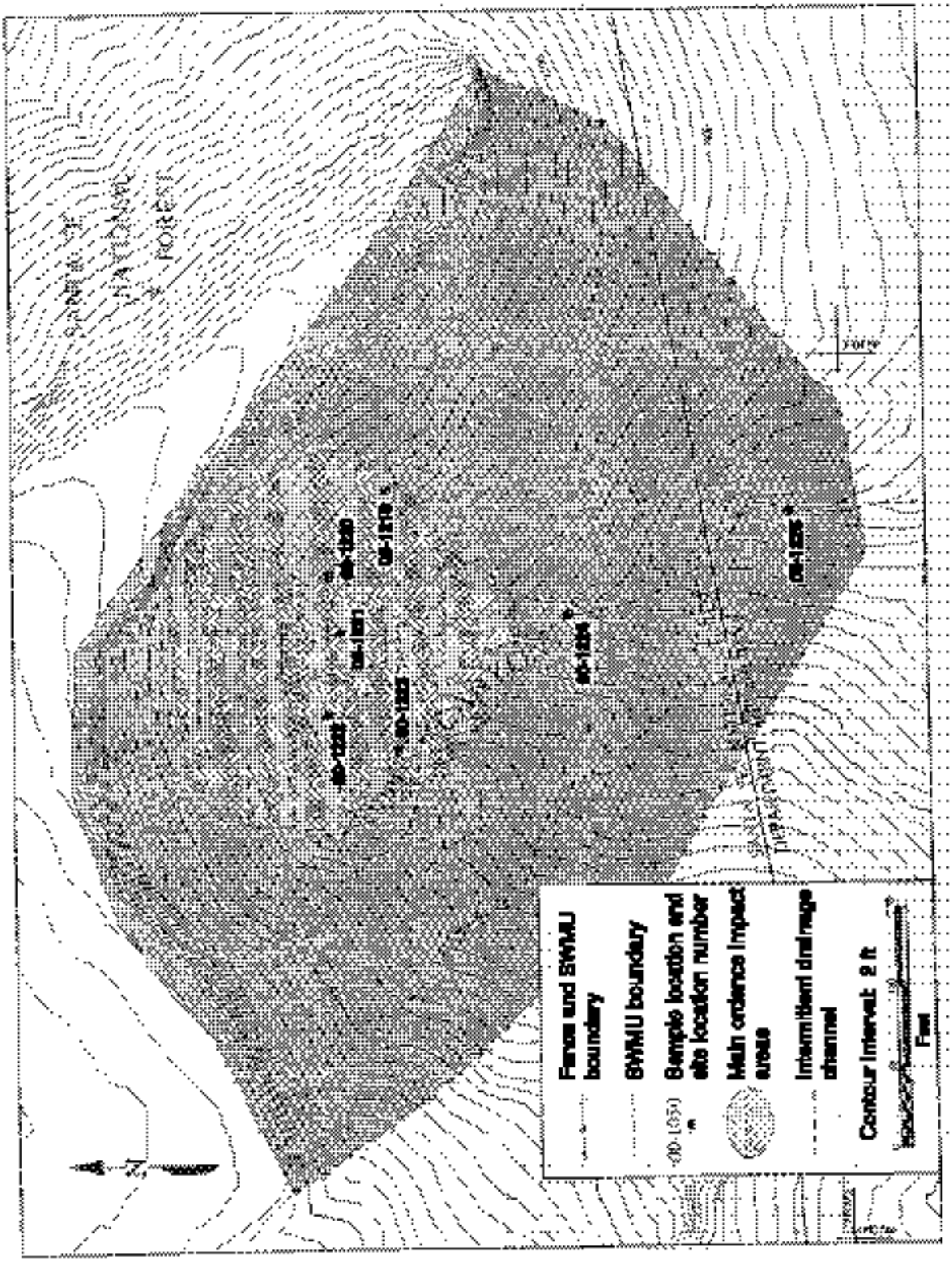

Figure 2.4-3. Map of SWMU 00-011(e) showing the main ordnance impact area, drainage pattern, and sample (site locations

Table 2.4-1
Results of Inorganic Analysis for SWMU 00-011(a) in ppm

		Al	Ag	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Mg	Mn	Na	Ni	Pb	Sb	Se	Tl	V	Zn
1994 Background Concentrations[a]		144,000	1.16	10.8	830	4.4	80,400	1.7	23	71	18	48,600	0.029	48,000	16,800	1600	36,300	19	44	1.6	26	0.9	113	146
1998 Sediment BVs[b]		15,400	1.0	3.98	127	1.31	4420	0.4	4.73	10.5	11.2	13,800	0.1	2690	2370	543	1470	9.38	19.7	0.83	0.3	0.73	19.7	60.2
1998 Soil BVs[b]		29,200	1.0	8.17	295	1.83	6120	0.4	8.64	19.3	14.7	21,500	0.1	3460	4610	671	915	15.4	22.3	0.83	1.52	0.73	39.6	48.8
Location ID	**Sample #**																							
00-1201	AAA6118	14,000	<1	3.9	120	1	2100	<0.4	6	11	6.8	12,000	<0.1	1900	2400	340	87	10	17	<0.1	0.3	0.3	22	34
00-1202	AAA6119	10,000	<1	2.5	110	0.7	1400	<0.4	6.3	7.9	4	9600	<0.1	1500	1600	430	92	6	17	<0.1	0.6	0.1	18	32
00-1203	AAA6134	10,000	<1	2.7	96	0.75	1500	<0.4	6	7.4	4.1	9800	<0.1	1500	1600	350	98	5	14	<0.1	0.5	0.1	17	30
00-1204	AAA6123	12,000	<1	3.6	130	1	2200	<0.4	6.6	10	5.6	13,000	<0.1	1600	2300	410	89	9	16	<0.1	0.3	0.3	23	34
00-1205	AAA6129	10,000	<1	3.3	120	0.91	1700	<0.4	6.8	8	5.6	11,000	<0.1	1700	1800	410	74	6	16	<0.1	0.4	0.3	18	30
00-1206	AAA6131	9400	<1	3	120	0.9	1800	<0.4	5.3	7	6	9900	<0.1	1700	1700	390	70	5	15	<0.1	0.3	0.3	16	32
00-1207	AAA6133	12,000	<1	3.2	120	0.88	1500	<0.4	5.3	8.5	5.8	11,000	<0.1	1900	1900	400	82	7.6	17	<0.1	0.4	0.1	20	33
00-1208	AAA6101	16,000	<1	3.5	180	1.2	2200	<0.4	8.8	11	7.9	14,000	<0.1	2500	2600	640	79	9	19	<0.1	0.6	0.3	24	40
00-1208	AAA6122	17,000	<1	3.7	150	1.2	2200	<0.4	5.9	12	8.2	14,000	<0.1	2500	2600	430	80	8	18	<0.1	<0.2	0.3	24	41
00-1209	AAA6125	10,000	<1	3.3	120	0.91	2000	<0.4	5	8.2	6	10,000	<0.1	2100	1800	360	70	6	29	<0.1	0.4	0.3	17	34
00 1210	AAA6126	12,000	<1	3.4	110	0.97	1900	<0.4	6	8.7	6.1	11,000	<0.1	1800	2000	330	74	9	17	<0.1	0.3	0.3	17	32
00-1211	AAA6120	11,000	<1	3.2	120	0.93	1900	<0.4	8	9	6	11,000	<0.1	1700	1900	460	84	9	18	<0.1	0.5	0.3	17	30
00-1212	AAA6099	11,000	<1	2.8	110	0.93	2000	<0.4	4.3	8.4	6.4	10,000	<0.1	1700	1900	300	77	7	18	<0.1	0.8	0.3	17	30
00-1213	AAA6127	5100	<1	2	44	0.41	750	<0.4	3	5	3.2	5800	<0.1	620	840	200	98	4	7	<0.1	0.6	<0.1	10	17
00-1214	AAA6115	5700	<1	2	59	0.44	910	<0.4	3.5	5.3	3.7	6300	<0.1	930	990	220	100	5	9	<0.1	0.5	<0.1	11	17
00-1215	AAA6103	9300	<1	2.2	94	0.73	1400	<0.4	5	8.7	4.2	9000	<0.1	1300	1500	310	81	7.6	10	<0.1	0.8	0.1	17	23
00-1216	AAA6128	9300	<1	3.3	110	0.82	1600	<0.4	5.4	7.4	4.8	9300	<0.1	1200	1600	340	70	6.4	14	<0.1	0.4	0.1	18	23
00-1217	AAA6113	6300	<1	3.6	83	0.64	1000	<0.4	6	5.3	4	8000	<0.1	940	1200	470	77	5	18	<0.1	0.8	0.1	17	18
00-1218	AAA6112	6900	<1	1.7	66	0.6	1200	<0.4	3.5	5	2.4	7100	<0.1	1000	1100	310	100	3.5	9	<0.1	0.7	0.1	10	24

Note: The RFI phase report inadvertently omitted the results for sample ID number AAA6112 in Table 1 of that report (from which the data for this table were derived). Subsequently, Analysis and Assessment Focus Area personnel pulled the data for the missing sample ID from the Laboratory's Facility for Information Management, Analysis, and Display (FIMAD) on October 2, 2000, and the missing data have been added to this table.

[a] Based on maximum concentrations in Environmental Restoration Project 1994, 38621.

[b] Based on background values in Environmental Restoration Project 1998, 59730.2.

Table 2.4-2
Results of Inorganic Analysis for SWMU 00-011(e) in ppm

		Al	Ag	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Mg	Mn	Na	Ni	Pb	Sb	Se	Tl	V	Zn
1994 Background Concentrations[a]		144,000	1.16	10.8	830	4.4	80,400	1.7	23	71	18	48,600	0.029	48,000	16,800	1600	36,300	19	44	1.6	26	0.9	113	146
1998 Sediment BVs[b]		15,400	1.0	3.98	127	1.31	4420	0.4	4.73	10.5	11.2	13,800	0.1	2690	2370	543	1470	9.38	19.7	0.83	0.3	0.73	19.7	60.2
1998 Soil BVs[b]		29,200	1.0	8.17	295	1.83	6120	0.4	8.64	19.3	14.7	21,500	0.1	3460	4610	671	915	15.4	22.3	0.83	1.52	0.73	39.6	48.8
Location ID	**Sample #**																							
00-1219	AAA6121	3100	<1	0.4	21	0.24	1100	<0.4	<0.5	1.7	2.7	3000	<0.1	550	710	90	430	<2	3.6	<0.2	<0.2	<0.2	4	80
00-1220	AAA6114	610	<1	0.4	8.5	0.23	290	<0.4	<0.5	0.7	0.5	2200	<0.1	320	160	100	58	<2	3.1	<0.2	<0.2	<0.2	<0.5	22
00-1221	AAA6109	1100	<1	0.6	17	0.39	700	<0.4	<0.5	<0.5	4.3	2700	<0.1	490	310	140	76	<2	6.4	<0.2	<0.2	<0.2	2.3	33
00-1221	AAA6108	1500	<1	0.7	18	0.45	800	<0.4	<0.5	0.9	4.6	4200	<0.1	430	370	200	100	<2	7	<0.2	<0.2	<0.2	3	28
00-1222	AAA6116	2600	<1	1.1	23	0.41	1000	<0.4	<0.5	1.8	2.4	3900	<0.1	610	570	160	98	<2	6	<0.2	<0.2	<0.2	4.5	32
00-1223	AAA6117	2500	<1	0.5	24	0.2	2200	<0.4	0.7	2.5	1.7	2600	<0.1	330	1000	67	430	<2	1.6	<0.2	<0.2	<0.2	4.1	18
00-1224	AAA6100	860	<1	<0.2	9.5	0.13	580	<0.4	<0.5	1.1	<0.5	2500	<0.1	<70	360	73	120	<2	1.7	<0.2	<0.2	<0.2	2.3	30
00-1225	AAA6130	840	<1	<0.2	7.3	0.09	610	<0.4	<0.5	1.5	<0.5	3800	<0.1	<70	440	130	67	<2	1.2	<0.2	<0.2	<0.2	2.5	41
00-1226	AAA6124	1500	<1	<0.2	14	0.2	530	<0.4	<0.5	1.7	1.3	2400	<0.1	360	390	81	100	<2	3.2	<0.2	<0.2	<0.2	3.4	22

[a] Based on maximum concentrations in Environmental Restoration Project 1994, 38621.

[b] Based on background values in Environmental Restoration Project 1998, 59730.2.

SWMU 00-011(a)

The holding times for the HE analyses were exceeded by two days. The samples were extracted within 7 days, but were not analyzed for 42 days (exceeding the 40-day limit). However, the data are still accurate because

(1) a report by the US Army Corps of Engineers entitled "Experimental Assessment of Analytical Holding Times for Nitroaromatic and Nitramine Explosives in Soil" demonstrates that exceeding holding times up to 56 days after extraction does not cause a loss of HE analytes, nitramines, and possibly nitroaromatics (US Army Corps of Engineers 1993, 68411 pp. 15–16)(Attachment D);

(2) HE sample results were below detection limits for all analytes; and

(3) no peaks were detected that could have been degradation products from any HE that may have biodegraded (per the analytical laboratory).

SWMU 00-011(e)

The holding times for the HE analyses were exceeded by six days. The samples were extracted within 7 days, but were not analyzed for 46 days (exceeding the 40-day limit). However, the data are still accurate for the same reasons as provided for SWMU 00-011(a).

2.4.3 Investigation #2

No investigations other than the RFI were required for SWMUs 00-011(a) or 00-011(e).

2.5 Site Conceptual Model

Both SWMUs 00-011(a,e) had the potential for HE and/or metal contamination resulting from the presence of both UXO and ordnance fragments. The primary release of contaminants would have been via ordnance explosion. The most significant hazard to human and ecological receptors would be from the potential presence of UXO. Once released to the surrounding soils, contaminants would have the potential to be transported via surface water runoff. Human receptors potentially could be exposed to these contaminants through incidental ingestion or dermal contact of soil. Ecological receptors potentially could be exposed to these contaminants through incidental ingestion or dermal contact of soil, root uptake, and foliar deposition.

2.5.1 Nature and Extent of Contamination

Prior to the RFI at SWMUs 00-011(a,e), any residual contamination was assumed to be largely confined to the fenced areas at each site. The debris was known to contain metals and may have been contaminated with HE. The EOD team determined that the deposition of ordnance was contained to a maximum depth of 0.5 m. This determination was based on the type of ordnance used at each firing range, the maximum depths of penetration of each type of ordnance in the sediments and soils of the impact area, and natural surface geological processes. During the RFI, the boundaries of SWMU 00-11(a) were expanded because the areas of debris deposition were found to extend beyond the fenced areas.

At SWMU 00-011(a), no inorganic chemicals were detected above 1994 background concentrations. However, using current BVs, several inorganic chemicals are detected above sediment BVs, including barium, cobalt, chromium, iron, lead, manganese, nickel, selenium, and vanadium. Samples collected from the downstream portions of the drainage reported concentrations below the sediment BV for all inorganic

chemicals, except selenium (which does not have a calculated sediment BV), thereby indicating that extent is defined for these chemicals (Figure 2.4-2). Selenium was detected at low-level concentrations similar to the nominal detection limit for selenium (0.3 mg/kg), which is used as the sediment BV. Additionally, selenium is not a contaminant associated with the operational activities that occurred at this SWMU (mortar target area containing unexploded ordnance and ordnance fragments). Therefore, the extent of contamination from operational activities at SWMU 00-011(a) is defined by the sampling data for all inorganic chemicals, including selenium.

In one of the nine samples collected at SWMU 00-011(e), zinc was detected at a concentration of 80 mg/kg, which is below the maximum 1994 background concentration of 146 mg/kg, but above its current sediment BV of 60.2 mg/kg. As sample locations progress down drainage from SWMU 00-011(e), zinc concentrations decrease to below background (Figure 2.4-3). The elevated zinc therefore is localized and the extent of zinc above background is defined.

2.5.2 Environmental Fate

The physiochemical properties of metals cause them to bind to soil and potentially move via transport of soil particles by water as opposed to moving in water as dissolved chemicals or moving in air from volatilization. Because both sites are well vegetated, movement of particles via wind dispersion is very unlikely. HE compounds are susceptible to bio- and photolytic degradation. Based on these factors, it is unlikely that any residual contamination present at SWMU 00-011(a) or 00-011(e) would have the potential for off-site migration.

2.6 Site Assessments

2.6.1 Summary

A discussion of the human health screening assessments for SWMUs 00-011(a,e) is presented in the RFI phase report for OU 1071 ordnance impact areas (Environmental Restoration Project 1994, 38621), submitted to EPA Region 6 on March 30, 1994, and approved by EPA Region 6 on December 9, 1994. A summary of the human health screening assessments is presented in Section 2.6.2.1 of this request for permit modification. A complete and detailed discussion of the ecological screening assessments for SWMUs 00-011(a,e) is presented in ecological screening evaluations for SWMUs 00-011(a,e) (Mirenda 2000, 68068) (Attachment E). A summary of the ecological screening assessments is presented in Section 2.6.2.2 of this request.

2.6.2 Screening Assessments

2.6.2.1 Human Health

The chemicals of potential concern (COPCs) identified in the data review for each SWMU were compared with Laboratory SALs to determine if the chemicals were detected at concentrations of potential concern to human health. The SALs used in these comparisons are values based on the methodology presented in Appendix C of the 2000 ER Project installation work plan (IWP) (LANL 2000, 66802). These SALs reflect a residential exposure scenario, which is the most conservative potential future land use for these SWMUs.

This human health risk screening evaluation follows the guidance provided by EPA Region 6 and NMED (EPA 1999, 64804; NMED 1998, 57761). SAL comparisons are conducted separately for carcinogens and noncarcinogens. The maximum concentration of each COPC is compared with the SALs for Class A, B1,

and B2 carcinogens; 10 times the SAL for Class C carcinogens; or one-tenth the SAL for noncarcinogens when there are more than 2 noncarcinogenic COPCs.

SWMU 00-011(a)

The following inorganic chemicals were retained as COPCs in the data review for SWMU 00-011(a): barium, chromium (total), cobalt, iron, lead, manganese, nickel, selenium, and vanadium. No organic COPCs were identified at this SWMU. Chromium was the only carcinogenic COPC (Class A carcinogen) detected above its current BV at this SWMU. The maximum detected concentration (12 mg/kg) was less than the SAL of 210 mg/kg for chromium. The remaining eight inorganic chemicals are noncarcinogenic COPCs and were compared with 0.1 SAL (Table 2.6-1). Barium, cobalt, lead, nickel, selenium, and vanadium were detected below 0.1 SAL, while iron and manganese were detected above 0.1 SAL.

A direct comparison with the SALs for iron (23,000 mg/kg) and manganese (3200 mg/kg) resulted in hazard quotients (HQs) of 0.6 and 0.2, respectively. Combining the HQs for iron and manganese resulted in a hazard index (HI) of 0.8. Adding the HQs for the other inorganic COPCs to this value, a total HI of approximately 1.0 was obtained. An HI of 1.0 or less indicates that exposure does not pose an unacceptable risk to human health (EPA 1989, 08021). Thus all COPCs identified in the data review for SWMU 00-011(a) were eliminated.

Table 2.6-1
SWMU 00-011(a)
Comparison of Noncarcinogenic COPCs with SALs

Analyte	Location ID	Sample ID	Maximum Concentration (mg/kg)	SAL (mg/kg)	0.1 SAL (mg/kg)
Barium	**00-1208**	**AAA6101**	180	5400	540
Cobalt	**00-1208**	**AAA6101**	8.8	3400	340
Iron	**00-1208**	**AAA6101**	14,000	23,000	2300
Lead	**00-1209**	**AAA6125**	29	400	40
Manganese	**00-1208**	**AAA6101**	640	3200	320
Nickel	**00-1201**	**AAA6118**	10	1600	160
Selenium	**00-1212**	**AAA6099**	0.8	390	39
Vanadium	**00-1208**	**AAA6101**	24	550	555

SWMU 00-011(e)

The data review for SWMU 00-011(e) indicated that zinc was greater than its sediment BV of 60.2 mg/kg in one of the nine samples (at a concentration of 80 mg/kg). Because the maximum concentration of zinc (80 mg/kg) is well below the SAL of 23,000 mg/kg for zinc, zinc was eliminated as a COPC.

2.6.2.2 Ecological

The purpose of an ecological screening evaluation is to identify chemicals of potential ecological concern (COPECs). The evaluation involves the calculation of HQs and HIs for all COPCs identified in the data review and all appropriate ecological screening receptors as described in “Screening Level Ecological Risk Assessment Methods” (Environmental Restoration Project 1999, 63303.2). The HQ analysis is based on the maximum detected concentration or detection limit for each COPC and is calculated by dividing these values by the soil ecological screening level (ESL) for the nine receptors. The derivation of ESLs is based on the approach presented in the ER Project’s ecological risk assessment methodology document (Environmental Restoration Project 1999, 63303.2) and the June 1999 version of the ER Project’s

ECORISK database (LANL 1999, 64161), which is part of LANL ER Records Package 186. The screening receptors for which ESLs have been derived include a plant, an invertebrate, deer mouse, vagrant shrew, desert cottontail, American robin, American kestrel, and the red fox. The rationale for using these receptors is presented in the ER Project's ecological risk assessment methodology document (Environmental Restoration Project 1999, 63303.2).

An HI is the sum of HQs across contaminants for a given screening receptor. An HQ or HI greater than 1.0 is an indicator of potential adverse impacts. Chemicals resulting in an HQ greater than 1.0 or that contribute more than 0.1 to an HI greater than 1.0 are identified as COPECs. An ecological assessment is designed to be conservative (i.e., some assumptions may not represent actual conditions) in order to minimize the possibility of eliminating an analyte that may pose a potential ecological risk.

SWMU 00-011(a)

At SWMU 00-011(a), several inorganic chemicals (all metals) were detected above sediment BVs, including barium (3 samples, 1 of which is a duplicate); cobalt (15 samples); chromium (3 samples); iron (2 samples); magnesium (3 samples); lead, manganese, and nickel (1 sample each); selenium (14 samples), and vanadium (5 samples). All of the detected values were less than twice the sediment BV, except for selenium, which was approximately 2.6 times the BV. (It should be noted that the BV for selenium is the nominal detection limit and not a calculated value.) In addition, with the exception of one lead and one cobalt concentration, all inorganic chemical concentrations are below sediment BVs. All other metals were either detected below background or had detection limits less than background. No HE was detected in any of the samples.

For the purposes of ecological screening, nonradionuclides are assumed to have a common toxicological effect. Although it is likely that this assumption is incorrect, the COPCs are grouped together in the comparison with ESLs. At SWMU 00-011(a), the HIs are greater than 1.0 for the plant, deer mouse, shrew, cottontail, robin, and kestrel and less than 1.0 for the earthworm and red fox. The HIs greater than 1.0 are driven by manganese and vanadium for the plant; by barium, cobalt, and manganese for the mouse; by barium and cobalt for the shrew; by cobalt and manganese for the cottontail; by barium, cobalt, and vanadium for the robin; and by barium and cobalt for the kestrel. All HQs for the earthworm and fox are 0.3 or less and the HIs are 0.5 and 0.2, respectively. Although iron and magnesium do not have ESLs, their respective maximum detected concentrations (14,000 and 2600 mg/kg) are similar to their respective BVs of 13,800 and 2370 mg/kg (Environmental Restoration Project 1998, 59730.2); while other detected concentrations of iron and magnesium are less than their BVs. Therefore, iron concentrations across the area encompassed by this SWMU are similar to background.

Most of the ESLs used in the comparison are below the sediment BVs. As a result, the HQs and subsequent HIs are elevated and overestimate the potential for risk to ecological receptors. As stated previously, the elevated concentrations of inorganic chemicals are similar to sediment background (i.e., generally less than twice the sediment BV) and equivalent to or slightly above soil BVs. Comparison of ESLs that are similar to or greater than sediment BVs with the maximum detected concentration of each inorganic chemical results in HQs of approximately 1.0 or less. For example, the maximum lead concentration (29 mg/kg) was approximately 1.5 times the sediment BV (19.7 mg/kg) (Environmental Restoration Project 1998, 59730.2) and had HQs ranging from 0.005 to 1.5. Because inorganic background levels are defined as naturally occurring concentrations of inorganic chemicals and are used to distinguish between contaminated and uncontaminated media, concentrations below, or similar to, background concentrations do not pose a potential risk to receptors. Therefore, it is the Laboratory's viewpoint that the elevated concentrations of inorganic chemicals in the sediments at SWMU 00-011(a) do not pose a potential for adverse impacts to ecological receptors.

The samples collected from the farthest downstream portion of the drainage channel (location ID 00-1212) resulted in concentrations below the sediment BV for all inorganic chemicals except selenium (which does not have a calculated sediment BV). Selenium was detected at concentrations ranging from 0.3 to 0.8 mg/kg at sample location IDs 00-1209, 00-1210, 00-1211, and 00-1212. These low-level detected concentrations are similar to the nominal detection limit for selenium (0.3 mg/kg), which is used as the sediment BV (Environmental Restoration Project 1998, 59730.2). Additionally, selenium is not a contaminant associated with the operational activities that occurred at this SWMU (mortar target area containing unexploded ordnance and ordnance fragments). Thus, the extent of contamination is defined.

SWMU 00-011(e)

At SWMU 00-011(e), zinc was detected at a concentration of 80 mg/kg, which is above its current sediment BV of 60.2 mg/kg. The zinc value was outside the range of background concentrations for zinc in sediment (9 to 56.2 mg/kg) (Environmental Restoration Project 1998, 59730.2). All other metals were either detected below background or had detection limits less than background. No HE was detected in any of the samples.

The maximum detected zinc concentration (80 mg/kg) at SWMU 00-011(e) was compared with the minimum ESL to determine if there was a potential for adverse impacts to ecological receptors. The minimum ESL for zinc is 10 mg/kg for the plant receptor and results in a maximum HQ for zinc of 8.0. The HQs for the other receptors are approximately 1 or less (ranging from 0.004 to 1.0). Zinc was detected only slightly above the range of background concentrations for current BVs and was detected in only one of nine samples collected from the SWMU. All other sediment concentrations were less than the sediment BV. Based on the comparison with ESLs, the low frequency of detection above background, and the fact that the site is well vegetated, it is the Laboratory's viewpoint that there is no potential for adverse impacts to ecological receptors from exposure to zinc. Therefore, zinc is not considered a COPEC at this site. In addition, zinc concentrations decreased to below background as sample locations progressed down-drainage. The elevated zinc therefore is localized and the extent of zinc above background is defined.

2.6.3 Risk Assessments

2.6.3.1 Human Health

Based on the elimination of all COPCs in the human health screening assessments for SWMUs 00-011(a,e), no human health risk assessment was necessary.

2.6.3.2 Ecological

Based on the elimination of all COPCs in the ecological screening assessment for SWMU 00-011(a,e), no ecological risk assessment was necessary.

2.6.4 Other Applicable Assessments

2.6.4.1 Surface Water

The ER Project has developed a procedure to assess sediment transport and erosion concerns at individual SWMUs. It provides a basis for prioritizing and scheduling actions to control the erosion of potentially contaminated soils at specific SWMUs. The procedure is a two-part evaluation. Part A is a compilation of existing analytical data for the SWMU, site maps, and knowledge-of-process information. Part B is an assessment of the erosion/sediment transport potential at a SWMU. Erosion potential is numerically rated from 1 to 100 using a matrix system. SWMUs that score below 40 have a low erosion

potential; those that score from 40 to 60 have a medium erosion potential; and those that score above 60 have a high erosion potential.

Surface water assessments for SWMUs 00-011(a,e) were conducted on June 25, 1999. The assessment resulted in a determination that generating an erosion matrix score is not practical for sites (such as these) that consist of highly variable topography that extends over several acres. Although erosion may occur on various portions of each site, sampling within drainages has determined that the low levels of residual contamination remaining are not migrating from the sites.

There are no wetlands or springs in the vicinity of either SWMU.

2.6.4.2 Groundwater

SWMUs 00-011(a,e) present no potential pathway for contaminant release to groundwater. Ordnance and ordnance fragments were dispersed as large particles primarily on the surface soils of these sites. No fragments were found below 0.5 m. The regional aquifer is approximately 800–1000 ft below SWMUs 00-011(a,e). There are no active or inactive local water supplies, and no production wells in the vicinity of either SWMU.

2.6.4.3 Underground Storage Tank

This section is not applicable.

2.6.4.4 Other

This section is not applicable.

2.7 No Further Action Proposal

2.7.1 Rationale

RFI activities for SWMUs 00-011(a,e) included locating and removing all UXO and ordnance fragments (1 in. or more in diameter) from these sites and collecting samples to determine whether residual contamination (metals and/or HE) was present.

The Laboratory ER Project submitted to EPA Region 6 an RFI phase report for SWMUs 00-011(a,e), dated March 1994 (Environmental Restoration Project 1994, 38621). The RFI phase report

- documents all cleanup activities and sampling results;
- provides information confirming that the nature and extent of contamination for SWMUs 00-011(a,e) was defined;
- documents that sampling performed for residual metals and HE at SWMUs 00-011(a,e) demonstrates that there is no HE residual contamination at these SWMUs and that residual metal contamination is at concentrations that pose an acceptable level of human risk under current and projected future land use; and
- proposes that this SWMU be considered for NFA.

In a December 9, 1994, letter (EPA 1994, 62098) (Attachment F), EPA Region 6 approved the RFI phase report.

The 1999 ecological screening evaluations conducted for SWMUs 00-011(a,e)

- state that, based on comparisons with ESLs, low frequency of detection, and extensive vegetation, there is no potential for adverse impacts from SWMUs 00-011(a,e) to ecological receptors.

The Laboratory ER Project is proposing SWMUs 00-011(a,e) for NFA based on

- the demonstration that this SWMU has been successfully remediated and poses no risk to human health, as reported in the RFI phase report for SWMUs 00-011(a,e); and
- the demonstration that these SWMUs pose no potential adverse impacts to ecological receptors, as reported in the ecological screening evaluations for SWMUs 00-011(a,e), which were completed after the RFI phase report.

2.7.2 Criterion

Based on the information presented in Sections 2.2 through 2.7, SWMUs 00-011(a,e) are being proposed for NFA under Criterion 5.

2.8 Supporting Documentation Attached

Attachment A: DOE Comprehensive Environmental Assessment and Response Program document, Vol. 1 of 2, p. TA0-6. (DOE-AL 1987, 08860)

Attachment B: Lojek memorandum regarding Francis interview for OU 1071 work plan. (Lojek 1991, 01905)

Attachment C: ER Project Land Conveyance and Transfer document, p. 42. (LANL 1999, 63037)

Attachment D: Corps of Engineers document regarding holding times, pp.15-16. (US Army Corps of Engineers 1993, 68411)

Attachment E: Ecological screening assessments for SWMUs 00-011(a,e). (Mirenda 2000, 68068)

Attachment F: December 9, 1994, letter from EPA Region 6 approving the RFI phase report. (EPA 1994, 62098)

2.9 References Used for Text of the Request for Permit Modification for SWMUs 00-011(a,e)

Environmental Restoration Project, March 1994. “RFI Phase Report, Operable Unit 1071, SWMU Aggregate 0-D, Ordnance Impact Areas,” Los Alamos National Laboratory report, Los Alamos, New Mexico. (Environmental Restoration Project 1994, 38621)

Mirenda, R., November 2000. “Ecological Screening Evaluation for PRSs 00-011(a,e),” Los Alamos National Laboratory, Los Alamos, New Mexico. (Mirenda 2000, 68068)

References Cited in Text

EPA (US Environmental Protection Agency), December 1989. “Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A),” Interim Final, EPA /540/1-89/002, Office of Emergency and Remedial Response, Washington DC, `http://www.epa.gov/superfund/programs/risk/ragsa/index.htm`. (EPA 1989, 08021)

EPA (US Environmental Protection Agency), July 14, 1999. “Human Health Medium Specific Screening Levels, EPA Region 6,” US Environmental Protection Agency, Region 6, Dallas Texas. (EPA 1999, 64804)

Environmental Restoration Project, September 1998. ”Inorganic and Radionuclide Background Data for Soils, Canyon Sediment, and Bandelier Tuff at Los Alamos National Laboratory,” Los Alamos National Laboratory report LA-UR-98-4847, Los Alamos, New Mexico. (Environmental Restoration Project 1998, 59730.2)

Environmental Restoration Project, April 1999. ”Screening Level Ecological Risk Assessment Methods,” Los Alamos National Laboratory report LA-UR-99-1405, Los Alamos, New Mexico. (Environmental Restoration Project 1999, 63303.2)

LANL (Los Alamos National Laboratory), June 1999. “LANL ECORISK Database (DB),” Los Alamos National Laboratory zip diskette, LANL ER Records Package 186, Los Alamos, New Mexico. (LANL 1999, 64161)

LANL (Los Alamos National Laboratory), November 2000. "Installation Work Plan for Environmental Restoration Project,” Revision 8, Draft (pending approval of administrative authority) Los Alamos National Laboratory report LA-UR-00-1336, Los Alamos, New Mexico. (LANL 2000, 66802)

2.10 History of Regulatory Deliverables

LANL, May 1992:	RFI Work Plan for OU 1071 submitted to EPA. (LANL 1992, 07667)
EPA, October 16, 1992:	NOD for OU 1071 RFI work plan. (EPA 1992, 11794). No NODs apply to SWMU 00-011(a) or 00-011(e).
LANL (via DOE-LAAO), November 16, 1992:	Response to NOD for OU 1071 RFI work plan submitted to EPA via DOE-LAAO. (DOE-LAAO 1992, 14694)
EPA, January 6, 1993:	Approvals of OU 1071 RFI work plan and LANL response to NOD. (EPA 1993, 58861. 209)
LANL (via DOE-LAAO), March 30, 1994:	RFI phase report for SWMUs 00-011(a,e) submitted to EPA Region 6 via DOE-LAAO. (ER Project 1994, 35136)
EPA, December 9, 1994:	Approval of RFI phase report for SWMUs 00-011(a,e). (EPA 1994, 62098)

2.10.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), May 1992. “RFI Work Plan for Operable Unit 1071,” Los Alamos National Laboratory report LA-UR-92-810, Los Alamos, New Mexico. (LANL 1992, 07667)

EPA (Environmental Protection Agency), October 16, 1992. “Re: RFI Work Plan for OU 1071 Los Alamos National Laboratory NM 890010515,” EPA letter to J.L. Bellows (DOE-LAAO Area Manager) from W.K. Honker (EPA Region 6, RCRA Permits Branch Chief), Dallas, Texas. (EPA 1994, 11794)

DOE-LAAO (US Department of Energy- Los Alamos Area Office), November 16, 1992. Transmittal letter for LANL response to Notice of Deficiency on RFI work plan for OU 1071, DOE/LAAO letter (LESH:4SS-024) to W. Honker (EPA Region 6, RCRA Permits Branch Chief) from J. Vozella (DOE-LAAO, Acting Chief, ESH Branch), Los Alamos, New Mexico. (DOE/LAAO 1992, 14694)

EPA (Environmental Protection Agency), January 6, 1993. EPA approval letter for RFI work plan for OU 1071, EPA letter to J. Bellows (DOE-LAAO Area Manager) from A. Davis (EPA Region 6 Hazardous Waste Management Division Director), Dallas Texas. (EPA 1993, 58861.209)

DOE-LAAO (US Department of Energy-Los Alamos Area Office), March 30, 1994. Transmittal letter for "RFI Phase Report, Operable Unit 1071, SWMU Aggregate 0-D, Ordnance Impact Areas," DOE-LAAO letter (LESH:TT-026) to W. Honker (EPA Region 6 RCRA Permits Branch Chief) from T. Taylor (DOE-LAAO ER Program Manager), New Mexico. (DOE-LAAO 1994, 38621)

EPA (Environmental Protection Agency), December 9, 1994. Approval letter for "RFI Phase Report, Operable Unit 1071, SWMU Aggregate 0-D, Los Alamos National Laboratory, NM0890010515," EPA letter to J. Vozella (DOE-LAAO Assistant Area Manager) from W. Honker (EPA Region 6 RCRA Permits Branch Chief), Dallas, Texas. (EPA 1994, 62098)

3.0 SWMU 01-001(m) SEPTIC TANK

3.1 Summary

The SWMU report and the RFI work plan for OU 1078 identified SWMU 01-001(m) as a septic tank serving Building TA-1-97, a former Zia Company warehouse. This area is now privately owned and currently the site of a self-storage company. Information recovered in a recent site visit and an archival search of Laboratory engineering drawings demonstrates that the septic tank was planned for installation, but never installed. In a November 29, 2000, letter, NMED approved the NFA for SWMU 01-001(m). SWMU 01-001(m) is being proposed for NFA under NFA Criterion 1 (the site does not exist).

3.2 Description and Operational History

3.2.1 Site Description

SWMU 01-001(m) was a planned septic tank (structure number TA-1-275) that was slated to serve Building TA-1-97, also known as Warehouse 13, which was located in former Technical Area (TA) 1. Although a lavatory and the associated TA-1-275 septic tank were planned for this building, Laboratory as-built engineering drawings demonstrate that neither the lavatory nor the septic tank was installed.

In 1977, a radiological survey and decontamination of the area formerly occupied by TA-1 was conducted (Ahlquist et al. 1977, 05710) (relevant pages included as Attachment A). Both the Ahlquist report and the RFI work plan for OU 1078 based the information they presented for Septic Tank TA-1-275 on Los Alamos Scientific Laboratory (LASL) Engineering Drawing ENG-R 85 (LASL 1958, 23446)(Attachment B), which incorrectly indicates that the septic tank was installed. It is important to note that ENG-R 85 is not labeled “as-built,” indicating that this drawing was based on one or more earlier engineering drawings/plans for the site. This fact prompted a more thorough search of the Laboratory’s engineering archive, which was conducted in August 2000. The search uncovered a preliminary sketch for the proposed installation of Septic Tank TA-1-275, dated June 14, 1947 (LASL 1947, 68084)(Attachment C), and the as-built engineering drawing for Warehouse 13, structure number TA-1-97, dated April 20, 1948 (LASL 1948, 68085) (Attachment D).

LASL Engineering Sketch 4-329, dated 1947 (Attachment C), shows the plan for a lavatory to be installed at the northeast corner of Warehouse 13 and also shows the plan for an associated septic tank and leaching cesspool. This plan is labeled as a sketch, rather than an as-built drawing, indicating its preliminary status.

LASL Engineering Drawing ENG 4-558 (Attachment D), dated 1948, shows the as-built construction of Warehouse 13 (TA-1-97). The drawing was generated in 1948 and confirmed as as-built in 1953. No plumbing fixtures or drains are indicated on the drawing. Furthermore, the as-built series of drawings for this building contains no plumbing plan, which confirms that no plumbing was installed in the building.

Although Ahlquist et al. searched for Septic Tank 275 in 1977, it was not found during these field activities or during earlier decontamination and decommissioning (D&D) efforts conducted in the 1960s. Ahlquist et al. determined that the elevation of the area where the tank was purported to be located was bulldozed to below the elevation where the tank should have been installed. As a result, Ahlquist surmised that the tank had been removed during the previous D&D effort conducted in the 1960s. (Ahlquist et al. 1977, 05710, p.114)(Attachment A). It should be noted that Ahlquist et al. based the existence of Septic Tank 275 on an engineering drawing that was incorrectly based on the preliminary sketch rather than on the as-built drawing. The OU 1078 work plan also used the engineering drawing based on the preliminary sketch.

In approximately 1978, a private businessman purchased the property on which Septic Tank 275 was purported to be located and constructed three buildings for use as self-storage units. The property owner reports that the original floor, foundation, and stem walls of Warehouse 13 were present on the site when he purchased the property and stated that there were no open or plugged penetrations in the floor, foundation, or stem walls. He used the former floor, foundation, and stem walls of Warehouse 13 to erect his first storage building. (Rust 2000, 68069) (Attachment E)

On August 9, 2000, a site visit was made to the self-storage unit at the former location of Warehouse 13. Investigators received permission to remove all stored articles from the storage unit located at the northeast end of the building where the Warehouse 13 restroom was proposed for installation. Visual inspection identified no open or plugged penetrations in the floor, foundation, and stem walls; no water staining; no evidence of tiling or other flooring; and no other indication that any water or plumbing ever serviced the former warehouse. A detailed description of this site visit and photographs taken during the visit are included as Attachment F (Rust 2000, 68070).

3.2.2 Operational History

Built in 1942, TA-1 was the first technical area established at the Laboratory. TA-1 buildings were constructed hurriedly to avoid delaying the scientific and engineering work so important to the World War II effort. Construction work often started before plans were completed (Ahlquist et al. 1977, 05710). TA-1 housed theoretical divisions, plutonium chemistry, physics research, Laboratory administration, and other miscellaneous activities. Between 1943 and 1945, much of the theoretical, experimental, and production work in developing the atomic bomb took place at TA-1. A gradual move from TA-1 to new facilities at TA-3 started in the 1950s and continued until 1965 when TA-1 became inactive. The technical area was decontaminated and demolished in stages beginning in 1966. This process was completed in the late 1960s when the US Atomic Energy Commission transferred the land comprising TA-1 to the County of Los Alamos for commercial and residential development.

Building TA-1-97 was built in 1945 and removed in 1954 (LANL ER Records Package 732) (Attachment G). During this period, the building was used exclusively as a warehouse for the storage of nonradioactive materials (Ahlquist et al. 1977, 05710, p. 133) (Attachment A).

In approximately 1978, the property where Septic Tank TA-1-275 was reputed to be located was purchased by a private businessman who still owns the property. Shortly after purchasing the property, the private owner erected three self-storage units that remain on the property today.

3.3 Land Use

3.3.1 Current

The property where Septic Tank TA-1-275 was reputed to be located is located in the commercial business district of Los Alamos. The property is privately owned and occupied by a self-storage business. It is used for commercial activities and access is not restricted.

3.3.2 Future/Proposed

There is no anticipated change from the commercial use of this area.

3.4 No Further Action Proposal

3.4.1 Rationale

Based on archival information and site visits, the ER Project has shown that

- septic tank structure number TA-1-275, SWMU 01-001(m), was never installed.

Thus the ER Project has demonstrated that SWMU 01-001(m) has never existed.

In an October 23, 2000, letter, the ER Project proposed SWMU 01-001(m) for NFA and included documentation in support of the NFA (LANL 2000, 68071) (Attachment H). In a November 29, 2000, letter, NMED personnel approved the NFA for SWMU 01-001(m) (NMED 2000, 68552) (Attachment I).

3.4.2 Criterion

Based on the information presented in Sections 3.2 through 3.4.1, SWMU 01-001(m) is proposed for NFA under NFA Criterion 1.

3.5 Supporting Documentation Attached

Attachment A: Ahlquist et al. report regarding radiological survey and decontamination of TA-1 (pp. 114 and 133). (Ahlquist et al. 1977, 05710)

Attachment B: LASL Engineering Drawing ENG-R 85. (LASL 1958, 23446)

Attachment C: LASL Engineering Sketch 4-329. (LASL 1947, 68084)

Attachment D: LASL Engineering Drawing ENG 4-558. (LASL 1948, 68085)

Attachment E: T. Rust personal interview with Rollin Jones. (Rust 2000, 68069)

Attachment F: T. Rust description of site visit and photographs taken during site visit. (Rust 2000, 68070)

Attachment G: LANL TA-01 structure history book. (LANL ER Records Package 732)

Attachment H: October 23, 2000, letter from ER Project (ER2000-0581) proposing SWMU 01-001(m) for NFA. (LANL 2000, 68071)

Attachment I: November 29, 2000, letter from NMED approving NFA for SWMU 01-001(m). (NMED 2000, 68552)

3.6 Reference Used for Text of the Request for Permit Modification for SWMU 01-001(m)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1078," Los Alamos National Laboratory report LA-UR-92-838, Los Alamos, New Mexico. (LANL 1992, 43454)

LANL (Los Alamos National Laboratory) October 16, 2000. “Additional Information for Potential Release Site (PRS) 01-001(m), Septic Tank 275, on Rollin Jones Property,” Los Alamos National Laboratory letter (ER2000-0581) to J. Young (NMED-HWB) from J. Canepa (LANL ER Program Manager) and T. Taylor (DOE-LAAO Project Manager), Los Alamos, New Mexico. (LANL 2000, 68071)

References Cited in Text

Ahlquist, A.J., A.K. Stoker, and L.K. Trocki, December 1977. “Radiological Survey and Decontamination of the Former Main Technical Area (TA-1) at Los Alamos, New Mexico,” Los Alamos Scientific Laboratory report LA-6887, Los Alamos, New Mexico. (Ahlquist et al., 1977, 05710)

3.7 History of Regulatory Deliverables

LANL, May 1992:	RFI work plan for OU 1078 submitted to EPA Region 6. (LANL 1992, 43454)
EPA, August 17, 1992:	NOD for OU 1078 RFI work plan. (EPA 1992, 14806.82)
LANL (via DOE-LAAO), October 30, 1992:	Response to NOD for OU 1078 RFI work plan submitted to EPA via DOE-LAAO. (DOE-LAAO 1992, 11807)
EPA, January 6, 1993:	Approval of OU 1078 RFI work plan and LANL response to NOD. (EPA 1993, 15110)
LANL, March 5, 1996:	RFI report for PRSs 1-007 (d,e,j), 1-001(a,e,o,m), 1-003 (a,e,d) and 1-006(e,o) submitted to NMED. (LANL 1996, 54461)
NMED, September 24, 1997:	RSI for RFI report for PRSs 1-007 (d,e,j), 1-001(a,e,o,m), 1-003 (a,e,d) and 1-006(e,o). (NMED 1997, 56732)
LANL, December 19, 1997:	Response to RSI for RFI report for PRSs 1-007 (d,e,j), 1-001(a,e,o,m), 1-003 (a,e,d) and 1-006(e,o) submitted to NMED. (LANL 1997, 57294)
LANL, October 23, 2000:	Additional information for PRS 01-001(m). (LANL 2000, 68735)
NMED, November 29, 2000	NFA approval letter for PRS 01-001(m). (NMED 2000, 68552)

3.7.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1078," Los Alamos National Laboratory report LA-UR-92-838, Los Alamos, New Mexico. (LANL 1992, 43454)

EPA (US Environmental Protection Agency), August 17, 1992. “. . . RFI work plan for Operable Unit 1078 . . . found to be deficient,” EPA Region 6 letter to J.L. Bellows (DOE-LAAO Area Manager) from W.K. Honker (EPA Region 6 RCRA Permits Branch Chief), Dallas, Texas. (EPA 1992, 14806.82)

DOE-LAAO (US Department of Energy-Los Alamos Area Office), October 30, 1992. “Re: Notice of Deficiency (NOD) for Operable Unit (OU) 1078 Plan,” DOE-LAAO letter (LESH: 6SS-051) transmitting LANL response to NOD (LANL 1992, 14806.88) to W. Honker (EPA Region 6 RCRA Permits Branch Chief) from J. Vozella (DOE-LAAO Area Manager), Los Alamos, New Mexico. (DOE-LAAO 1992, 11807)

EPA (US Environmental Protection Agency), January 6, 1993. “RFI Workplan for OU 1078, Los Alamos National Laboratory NM08900105,” EPA approval letter to J.L. Bellows (DOE-LAAO Area Manager) from A.M. Davis (EPA Region 6 Hazardous Waste Management Division Director), Dallas, Texas. (EPA 1993, 15110)

LANL (Los Alamos National Laboratory), March 5, 1996. “Submittal of the Resource Conservation and Recovery Act Facility Investigation (RFI) Report for Aggregates A, B, H, I, J in Technical Area (TA) 1,” Los Alamos National Laboratory letter (EM/ER:96-104) to D. Neleigh (EPA, Region 6) from J. Jansen (ER Program Manager) and T. Taylor (DOE-LAAO Program Manager), Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1996, 54461)

NMED (New Mexico Environment Department), September 24, 1997. “Request for Supplemental Information RCRA Facility Investigation Report, Technical Area 1, Aggregates A, B, H, I, & J, Los Alamos National Laboratory NM0890010515,” NMED letter to G.T. Todd (DOE-LAAO Area Manager) and S. Hecker (Laboratory Director) from R.S. Dinwiddie (NMED RCRA Permit Management Program Manager), Santa Fe, New Mexico. (NMED 1997, 56732)

LANL (Los Alamos National Laboratory), December 19, 1997. “Response to Request for Supplemental Information for RFI Report for TA-1, Aggregates A, B, H, I, and J (Former OU 1078),” Los Alamos National Laboratory letter (EM/ER:97-487) to S. Dinwiddie (NMED-HRMB) from J. Canepa (LANL/ER Program Manager) and T. Taylor (DOE-LAAO Program Manager), Los Alamos, New Mexico. (LANL 1997, 57294)

LANL (Los Alamos National Laboratory) October 23, 2000. “Additional Information for Potential Release Site (PRS) 01-001(m), Septic Tank 275, on Rollin Jones Property,” Los Alamos National Laboratory letter (ER2000-0581) to J. Young (NMED-HWB) from J. Canepa (LANL ER Program Manager) and T. Taylor (DOE-LAAO Project Manager), Los Alamos, New Mexico. (LANL 2000, 68735)

NMED (New Mexico Environment Department), November 29, 2000.” Approval of No Further Action for Potential Release Site 01-001(m), Septic Tank 275, Los Alamos National Laboratory, NM0890010515,” NMED letter to J. Browne (Laboratory Director) and T. Taylor (DOE-LAAO Program Manager) from J. Young (Corrective Action Project Leader, RPMP), Santa Fe, New Mexico. (NMED 2000, 68552)

4.0 SWMU 03-046
ACTIVE ABOVEGROUND WASTEWATER TANK

4.1 Summary

SWMU 03-046 is an active aboveground wastewater neutralization tank located in TA-3 near the Laboratory's steam plant. The function of the tank is to collect wastewater from boilers, softeners, and a demineralization tank located at the steam plant and to ensure that the effluents from this equipment meet National Pollutant Discharge Elimination System (NPDES) permit discharge requirements by adjusting pH, as needed. The tank discharges to Sandia Canyon via a NPDES-permitted outfall. No documented releases from the tank have occurred. The contents of the tank (water from steam plant boilers, softeners, and a demineralization tank) are discharged to an outfall that is subject to NPDES discharge requirements, but the contents do not meet the definition of a RCRA solid waste provided in the federal Solid Waste Disposal Act and the New Mexico Hazardous Waste Act. Therefore, the tank does not meet the definition of a SWMU. SWMU 03-046 is being proposed for NFA under NFA Criterion 2 (the site has never been used for the management of RCRA solid or hazardous wastes and/or constituents).

4.2 Description and Operational History

4.2.1 Site Description

SWMU 03-046 is an active aboveground wastewater neutralization tank located in TA-3 approximately 60 ft southeast of Building TA-3-22, the Laboratory's steam plant (Figure 4.2-1). The tank is fiberglass and has a capacity of 10,000 gal. It is completely enclosed in a 14.6- by 14.6- by 12-ft-deep concrete secondary containment area with a concrete floor and walls that are approximately 1 ft thick. A photograph of the neutralization tank and its containment is included as Attachment A (LANL 1993, 68058).

There is an access space between the tank and the walls of the containment area surrounding the tank to allow for visual inspection of the tank. Visual inspections for integrity are conducted daily by steam plant operations and maintenance personnel and monthly by ESH-18 Water Quality Program personnel as mandated under the Storm Water Pollution Prevention Plan for the TA-3-22 Steam Plant (Zimmerly 1999, 69790 (Attachment B).

4.2.2 Operational History

The sole function of the SWMU 03-046 tank is to collect the wastewater from boilers, softeners, and a demineralization tank located at the TA-3-22 steam plant and to ensure that the effluents from this equipment meet NPDES-permit discharge requirements by adjusting pH, as needed. The pH adjustment is made using either sulfuric acid or sodium hydroxide. When the wastewater in the tank is adjusted to the proper pH, it is released to a drain that subsequently receives discharges from two cooling towers and a chlorine building (Santa Fe Engineering 1994, 70001) (Attachment C). The drain discharges to Sandia Canyon via an NPDES-permitted outfall, 01A001, subject to the NPDES discharge requirements of Subsection 1342 of the Clean Water Act (US Code: Title 33, Chapter 26, Subchapter IV). The outfall is designated as a separate SWMU [03-045(b)] and is included as part of consolidated unit PRS 03-012(b)-00.

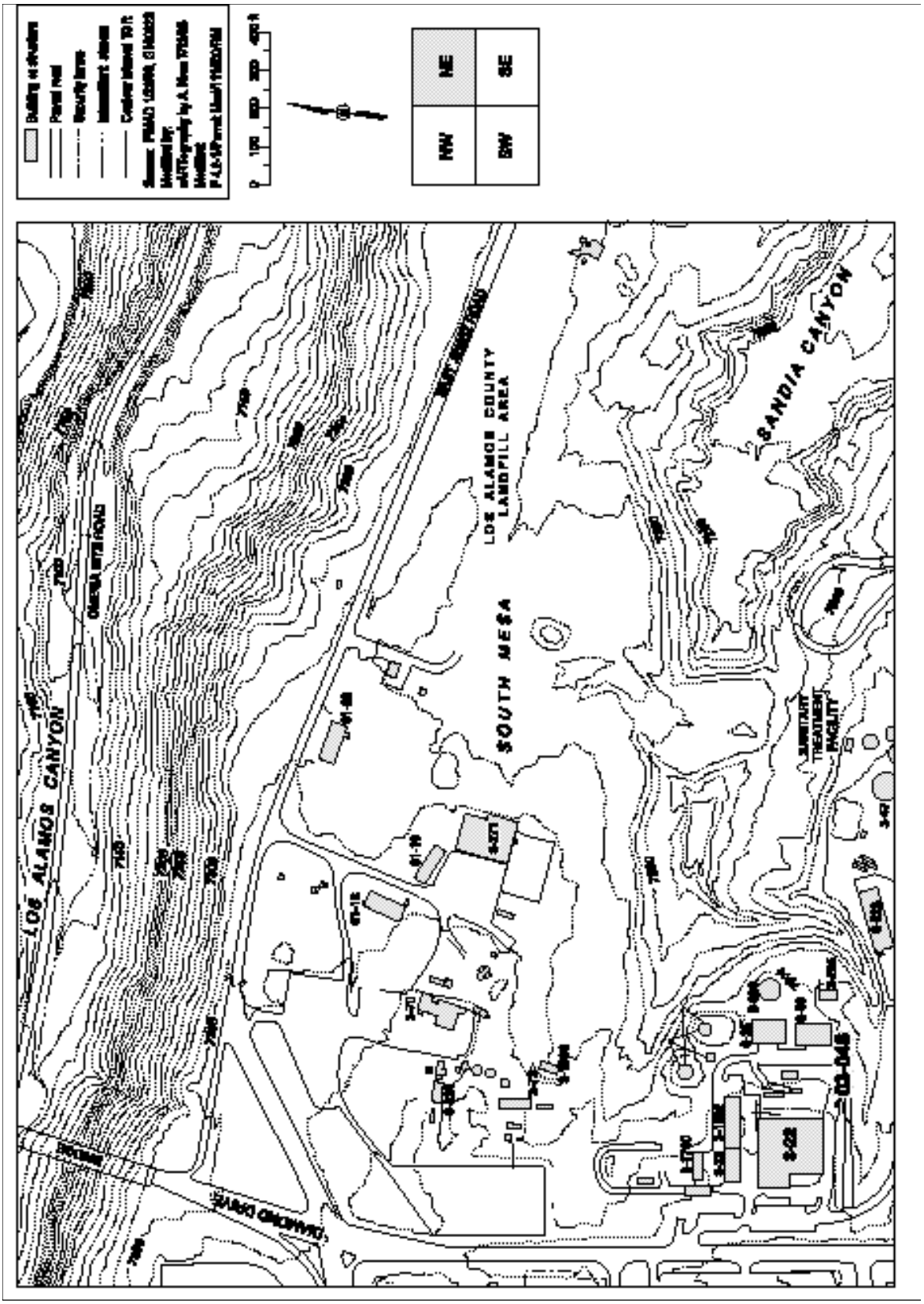

Figure 4.2-1. Topographic map of TA-3 (NE quadrant) showing location of SWMU 03-046

Archival search resulted in no record of a release from the SWMU 03-046 tank. However, between May 20 and 21, 1990, three releases occurred that were related to the SWMU 03-012(b) outfall. The three NPDES incidents involved the uncontrolled release of sulfuric acid to the neutralization tank and resulted in the discharge of acidic wastewater (i.e., with a pH below the NPDES permit limit of 6.0–9.0 pH) to the outfall (and, subsequently, to a portion of Sandia Canyon). In each instance, soda ash was added to the effluent to neutralize the release, the spills were reported to EPA Region 6, and the affected area of Sandia Canyon was neutralized with soda ash. The EPA Water Management Division and the NMED Surface Water Quality Bureau approved the spill reports and corrective action plan as implemented. Both agencies concurred with the actions taken by the Laboratory for these releases and closed the incident.

4.3 Land Use

4.3.1 Current

TA-3 is an industrial area containing the core of the Laboratory's operational facilities, including its principal administrative buildings, cafeteria, library, workshops, and warehouses. The SWMU 03-046 wastewater treatment tank is located approximately 60 ft southeast of Building TA-3-22, the Laboratory's power plant. The tank's location is in an industrial area with high-security restricted access. A chain-link fence topped with barbed wire encloses the portion of the technical area where this SWMU is located. Access through the fence is obtained only by passing through a guard gate. These security measures effectively eliminate the possibility of inadvertent site intrusion.

4.3.2 Future/Proposed

The Laboratory does not anticipate any change from industrial use with restricted access of this portion of TA-3 for the operational life of the Laboratory (LANL 1995, 57224, pp.11–12) (Appendix D, Attachment 1).

4.4 No Further Action Proposal

4.4.1 Rationale

The contents of the tank do not meet the definition of a RCRA solid waste provided in the federal Solid Waste Disposal Act included in NMED's RPMP Document Requirement Guide, page 7, Section II.A.1.f (NMED 1998, 57897) and the New Mexico Hazardous Waste Act. Therefore, the tank does not meet the definition of a SWMU provided in Module VIII of the Laboratory's Hazardous Waste Facility Permit (Section A, p. 3).

The Laboratory ER Project is proposing SWMU 03-046 for NFA based on

- the sole purpose of the tank is to collect wastewater from TA-3-22 steam plant equipment (water boilers, softeners, and a demineralization tank) and to ensure that these effluents meet NPDES-permit discharge requirements by adjusting pH, as needed;
- the contents of the tank are discharged to an outfall that is subject to the NPDES discharge requirements of Subsection 1342 of the Clean Water Act (US Code: Title 33, Chapter 26, Subchapter IV);
- the contents of the tank do not meet the definition of a RCRA solid waste provided in the amended Solid Waste Disposal Act included in NMED's RPMP Document Requirement Guide, page 7, Section II.A.1.f (NMED 1998, 57897) and the New Mexico Hazardous Waste Act.

Therefore, the tank does not meet the definition of a SWMU provided in Module VIII of the Laboratory's Hazardous Waste Facility Permit (Section A, p. 3); and

- no releases occurred from the tank.

4.4.2 Criterion

Based on the information presented in Sections 4.2 through 4.4, SWMU 03-046 is being proposed for NFA under Criterion 2.

4.5 Supporting Documentation Attached

Attachment A: Photograph of SWMU 03-046 neutralization tank. (LANL 1993, 68058)

Attachment B: Relevant pages from Storm Water Pollution Prevention Plan for TA-3-22. (Zimmerly 1999, 69790)

Attachment C: Relevant pages from Wastewater Stream Characterization Study for TA-3-22. (Santa Fe Engineering 1994, 70001)

4.6 Reference Used for Text of the Request for Permit Modification for SWMU 03-046

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1114, Addendum 1," Los Alamos National Laboratory Report LA-UR-95-731, Los Alamos, New Mexico, p. 6-39. (LANL 1995, 57590)

NMED (New Mexico Environment Department), March 1998. "RPMP Document Requirement Guide," Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico. (NMED 1998, 57897)

4.7 History of Regulatory Deliverables

LANL, July 1995: RFI work plan for OU 1114, Addendum 1 submitted to EPA. (LANL 1995, 57590)

EPA, November 1, 1995: NOD for OU 1114 RFI work plan, Addendum 1. (EPA 1995, 55161.49)

LANL, February 8, 1996: Response to NOD for OU 1114 RFI work plan, Addendum 1. (LANL 1996, 54088)

NMED, August 26, 1996: Disapprovals of OU 1114 RFI work plan [Addendum 1] and LANL response to NOD. (NMED 1996, 65591)

LANL, November 6, 1996: Request for clarification of disapproval letter for NOD response for RFI work plan for OU 1114, Addendum 1. (LANL 1996, 55188)

4.7.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1114, Addendum 1," Los Alamos National Laboratory Report LA-UR-95-731, Los Alamos, New Mexico, p. 6-61–6-63 (LANL 1995, 57590).

EPA (US Environmental Protection Agency, November 1, 1995. "Notice of Deficiency Addendum 1 to Work Plan for Operable Unit (OU) 1114, Los Alamos National Laboratory (NM0890010515)," US

Environmental Protection Agency (Region 6) letter to T. Taylor (DOE Program Manager) from D. W. Neleigh (EPA Region 6 Chief, New Mexico Federal Facilities Section), Dallas, Texas. (EPA 1995, 55161.49)

LANL (Los Alamos National Laboratory), February 8, 1996. "Response to the Notice of Deficiency for the RFI Work Plan for Operable Unit 1114, Addendum 1," Field Unit 1, Los Alamos National Laboratory report, Los Alamos, New Mexico. (LANL 1996, 54088)

NMED (New Mexico Environment Department), August 26, 1996. "Disapproval of the RCRA Facility Investigation Work Plan for Operable Unit 1114, Los Alamos National Laboratory (NM0890010515)," NMED letter to G.T. Todd (DOE/LAAO) from E. Kelley (NMED-HRMB), Santa Fe, New Mexico. (NMED 1996, 65591)

LANL (Los Alamos National Laboratory), November 6, 1996. "Clarification Request for the EPA Disapproval Letter for OU 1114 Work Plan, Addendum 1, " Los Alamos National Laboratory letter EM/ER:96-573 to E. Kelley (NMED-HRMB) from J. Jansen (LANL ER Program), Los Alamos, New Mexico. (LANL 1996, 55188)

5.0 SWMU 08-005
FORMER CRYSTAL INCUBATOR

5.1 Summary

SWMU 08-005 was an inactive incubator used to grow crystals for photographic equipment experiments. Prior to VCA activities, a sample was collected from the residue that remained in the interior of the incubator. The VCA for this SWMU included removal of the incubator and confirmatory soil sampling beneath the incubator by the ER Project. Confirmatory sampling verified that no release of contaminants occurred from the interior of the incubator to the surrounding soil. The VCA completion report describing the removal of, and the confirmatory sampling conducted for this SWMU, was submitted to NMED on April 19, 1996. SWMU 08-005 is being proposed for NFA under Criterion 3 (no release).

5.2 Description and Operational History

5.2.1 Site Description

SWMU 08-005 was an inactive 4- by 4- by 4-ft metal incubator (LANL 1993, 69675) (Attachment A) located approximately 40 ft northwest of Building TA-8-2, a machine shop and storage building (Figure 5.2-1). The lid of the incubator contained two windows. The interior of the incubator had a gasket and strap consisting of a nonfriable asbestos-containing material. The exterior was rusted from several years of exposure to the elements.

5.2.2 Operational History

TA-8 is an inactive technical area formerly used for nondestructive explosives and weapons testing and administration. Structures formerly located in this technical area included a laboratory and office building containing a large photographic facility. Many structures at TA-8 have been decontaminated and decommissioned.

The SWMU 08-005 incubator was used in the 1950s by the Laboratory Field Test Division's J-16 group to grow crystals for photographic experiments (LANL 1993, 20949, p. 5-28; LANL 1996, 54328). The crystal-growth experiments were conducted in Building TA-8-1, an underground control bunker that has been inactive for at least 20 years. At an unknown date, the incubator was removed from Building TA-8-1 and placed outdoors approximately 40 ft northwest of the building where it remained inoperative until its removal in 1994. It is possible that the incubator was removed from Building TA-8-1 and placed near Building TA-8-2 during the execution of a decontamination activity conducted in 1972 (Courtright 1972, 14934)(Attachment B).

Chemicals used in the growth experiments were terphenyl, alpha naphthyl oxazole, styrene, methyl chloroform, and thallous iodide (DOE 1987, 08663). During a visual inspection of the incubator conducted by the investigating field team prior to the VCA, a crystallized residue (naphthalene) was observed on the interior bottom of the incubator. A brown sludge-like material was found beneath the crystallized naphthalene (Attachment A); (LANL1993, 52111) (Attachment C, Part 1). The incubator was standing upright and no staining was observed on the ground surrounding the vessel (LANL 1993, 20949, p. 5-28). Prior to the VCA, a sample was taken from the brown sludge-like material within the incubator (Attachment C, Part 1). The analytical results for this sample are included in Attachment C, Part 2 (LANL 2000, 69648) and discussed in the Determination of No Release section of this request for permit modification. As part of the VCA, the incubator was removed from TA-8 on September 30, 1994, and transported to the Laboratory's salvage yard.

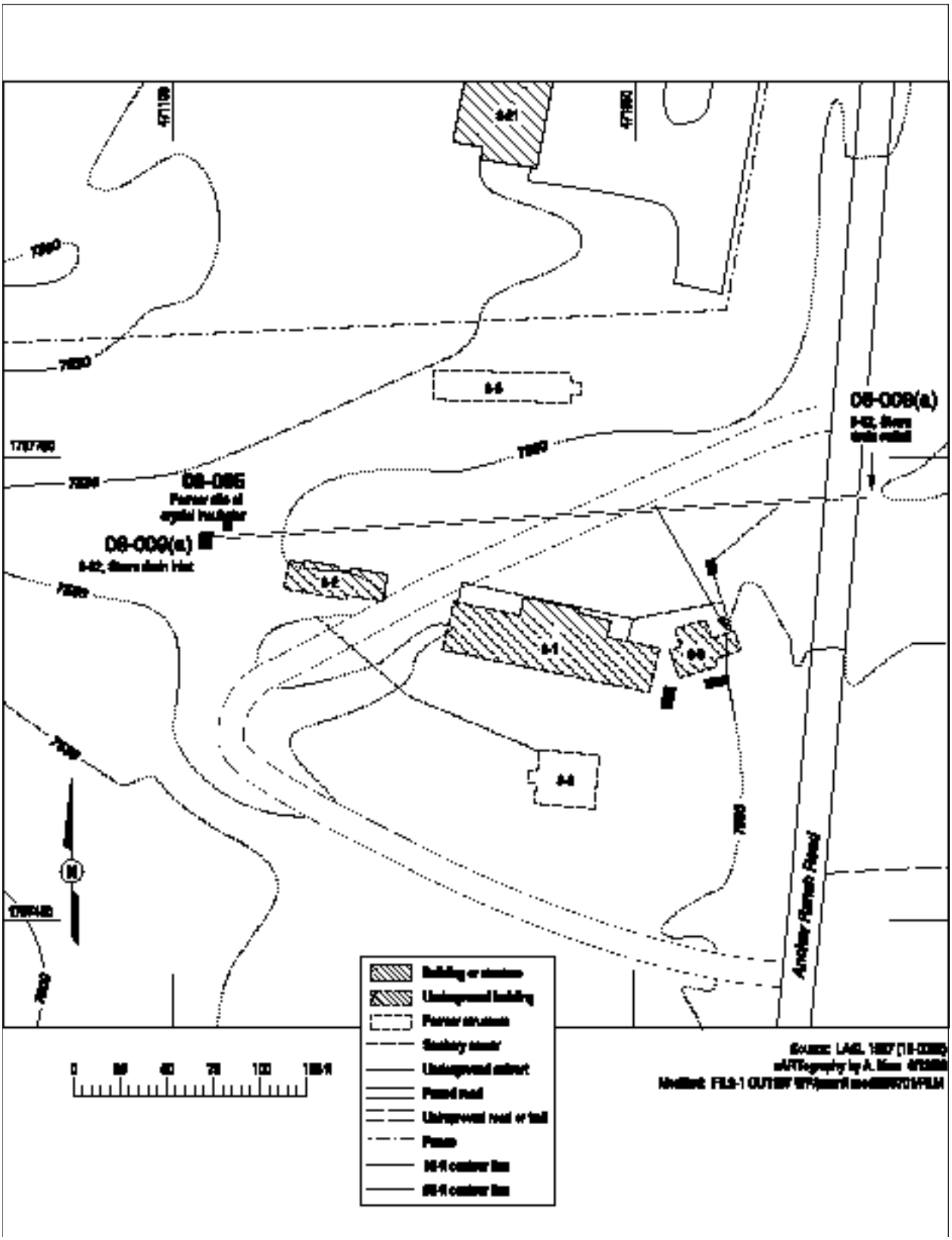

Figure 5.2-1. Locations of SWMU 08-005 and nearby SWMUs

VCA Activities

The RFI work plan for OU 1157 recommended SWMU 08-005 for a VCA and includes a sampling and analysis strategy for this SWMU (pp. 6-53 through 6-56). The VCA is described in a memorandum (Harry 1995, 49326) and a brief VCA report (LANL 1996, 54328); the memorandum and VCA report are included as Attachment D, Parts 1 and 2, respectively.

VCA activities were initiated on September 20, 1994, and completed on August 7, 1995. Field screening indicated that radiation and HE were not present on the interior or exterior of the incubator. Approximately 1 ft^3 of naphthalene residue was removed from the interior of the incubator, placed in a suitable container, and disposed of appropriately. The Johnson Controls World Services, Inc. (JCI) asbestos abatement crew removed the asbestos strap and gasket from the incubator and disposed of the asbestos appropriately. On September 30, 1994, the incubator was transported to the Laboratory's on-site salvage yard for recycling. A visual inspection of the incubator was made at the salvage yard. No holes or cracks were visible on the exterior of the incubator.

After the incubator was removed, a visual inspection of the surrounding soil was made. The soil beneath the incubator was hard, dry, and rocky, and rust stains were visible where the incubator had rested on the ground. A cord that had been beneath the incubator was inspected by the JCI asbestos abatement crew, was found to contain nonfriable asbestos insulation, and was disposed of appropriately.

In October 1994, the soil beneath the incubator was screened with radiation and organic chemical field instruments. No elevated readings were measured. On July 26, 1995, a surface soil sample was taken at the former location of the incubator. The sample was analyzed for SVOCs by method SW 846-8270, for percent solids by method 2540-G, and for RCRA metals by SW 846-6010, -6010A, -7060A, -7471, -7740, and -7841. VCA sample results are included in the VCA report (Attachment D, Part 2).

The vegetation on and surrounding the area on which the incubator had rested showed no evidence of stress. No site restoration was required because the site was undisturbed by VCA activities.

Determination of No Release

The analytical results for the sample of brown sludge taken from within the incubator prior to the VCA (Attachment C, Part 2) indicated that anthracene, methylnaphthalene[-2], and naphthalene were present in the incubator at concentrations of 9200, 220, and 75,000 mg/kg, respectively. These constituents are consistent with the chemicals used for the crystal growth experiments formerly conducted in the incubator.

In the soil beneath the incubator, zinc was detected at a concentration of 170 mg/kg (the current soil BV for zinc is 48.8 mg/kg), and bis-2-ethylhexylphthalate was detected at a concentration of 0.33 mg/kg (Attachment D, Part 2). None of the analytes detected within the incubator are present in the results from the soil beneath the incubator, thus indicating that no release of the contents from within the interior of the incubator occurred.

The presence of zinc and bis-2-ethylhexylphthalate in the soil beneath the incubator is unrelated to the contamination found within the crystal incubator. Zinc may be present due to the weathering of the exterior of the incubator. Bis-2-ethylhexylphthalate is a common contaminant often introduced (at trace levels) via sample collection and/or analytical laboratory analyses. Additionally, the bis-2-ethylhexylphthalate detected at this site does not meet the definition of a RCRA listed hazardous waste under 40 CFR 261.32 or 261.33. Both the zinc concentration and the bis-2-ethylhexylphthalate concentration are well below current Laboratory human health screening action levels (23,000 mg/kg and 35 mg/kg, respectively), derived in accordance with the ER Project's current installation work plan (LANL 2000, 66802), and ecological

screening levels found in the 2000 version of the ER Project's ECORISK database (LANL 2000, 67822, which is part of LANL ER Records Package 186).

5.3 Land Use

5.3.1 Current

SWMU 08-005 was located in the central portion of TA-8, near its southern boundary. TA-8 is an industrial area with high-security restricted access. A chain-link fence topped with barbed wire encloses this technical area. Access through the fence is obtained only by passing through a guard gate. These security measures effectively eliminate the possibility of inadvertent site intrusion.

5.3.2 Future/Proposed

The Laboratory does not anticipate any change from the industrial use with restricted access of TA-8 for the operational life of the Laboratory (LANL 1995, 57224, pp.11–12) (Appendix D, Attachment 1). Thus, this area will remain under institutional control.

5.4 No Further Action Proposal

5.4.1 Rationale

After removal from Building TA-8-1, the crystal incubator was placed outside the building where it remained inoperative until its VCA removal in 1994. A sample was collected from the brown residue within the incubator prior to the VCA for SWMU 08-005. The VCA consisted of removing the crystal incubator and collecting a soil sample from beneath it to determine whether any residual contamination (metals and/or SVOCs) was present. None of the analytes present in the contents of the incubator were present in the soil beneath the incubator. Thus, sample results verify that no release occurred from the incubator during the period it remained outside the building.

The Laboratory ER Project submitted to NMED a VCA completion report for SWMU 08-005 on April 19, 1996 (LANL 1996, 54328). The VCA completion report

- documents all cleanup activities and sampling results;
- provides information that no release from SWMU 08-005 occurred; and
- proposes that this SWMU be considered for NFA.

The presence of the zinc and bis-2-ethylhexylphthalate detected at this SWMU is not related to the contamination found within the incubator.

Thus the ER Project has demonstrated that there has been no release of RCRA solid or hazardous wastes and/or constituents to the environment from SWMU 08-005. The term "release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment.

5.4.2 Criterion

Based on the information presented in Sections 5.2 through 5.4, SWMU 08-005 is being proposed for NFA under Criterion 3.

5.5 Supporting Documentation Attached

Attachment A: Exterior and interior photographs of incubator. (LANL 1993, 69675)

Attachment B: SOP, dated July 12, 1972. (Courtright 1972, 14934)

Attachment C: Relevant excerpts from Daily Activity Log (LANL1993, 52111) and analytical results for sample AAB0761. (LANL 2000, 69648)

Attachment D: EES memorandum (Harry 1995, 49326) and VCA report. (LANL 1995, 54328)

Appendix D, Attachment 1: LANL site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

5.6 References Used for Text of the Request for Permit Modification for SWMU 08-005

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1157," Los Alamos National Laboratory report LA-UR-93-1230, Los Alamos, New Mexico. (LANL 1993, 20949)

Environmental Restoration Project, February 27, 1996. "Voluntary Corrective Action Plan Completion Report for Potential Release Site 8-005, Former Waste Storage Vessel," Revision 1, Los Alamos National Laboratory report LA-UR-96-468, Los Alamos, New Mexico. (Environmental Restoration Project 1996, 54328)

Harry, J., June 26, 1995. "Removal of Storage Vessel from TA-8," Los Alamos National Laboratory memorandum EES-5:95-290, Los Alamos, New Mexico. (LANL 1995, 49326)

References Cited in Text

DOE (US Department of Energy), October 1987. "Phase I: Installation Assessment, Los Alamos National Laboratory," Volume 1 of 2, (draft), Comprehensive Environmental Assessment and Response Program, Albuquerque Operations Office, Albuquerque, New Mexico. (DOE 1987, 08663)

LANL (Los Alamos National Laboratory), September 2000. "LANL ECORISK Database," Los Alamos National Laboratory CD disk, LANL ER Records Package 186, Los Alamos, New Mexico. (LANL 2000, 67822)

LANL (Los Alamos National Laboratory), March 2000. "Installation Work Plan for Environmental Restoration Project, Revision 8," Draft (pending approval of administrative authority), Los Alamos National Laboratory report LA-UR-00-1336, Los Alamos, New Mexico. (LANL 2000, 66802)

5.7 History of Regulatory Deliverables

LANL, July 15, 1993:	RFI work plan for OU 1157 submitted to EPA Region 6. (LANL 1993, 20949)
EPA, April 5, 1994:	NOD for OU 1157 RFI work plan (EPA 1994, 35231). Comment 13 applies to SWMU 08-005.
LANL, May 20, 1994:	Response to NOD for OU 1157 RFI work plan. (ER Project 1994, 38539)
EPA (via DOE-LAAO), July 21, 1994:	Draft list of modifications for OU 1157 RFI work plan. (DOE 1994, 39957)

LANL, September 20, 1994: Response to draft list of modifications for OU 1157 RFI work plan. (ER Project 1994, 41184)

EPA, October 7, 1994: Approval of OU 1157 RFI work plan and LANL response to NOD. (EPA 1994, 43549)

LANL, April 19, 1996: VCA completion report for SWMU 08-005 submitted to NMED. (ER Project 1996, 53775)

5.7.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1157," Los Alamos National Laboratory report LA-UR-93-1230, Los Alamos, New Mexico. (LANL 1993, 20949)

EPA (US Environmental Protection Agency), April 5,1994. “Notice of Deficiency, Operable Unit 1157, Los Alamos National Laboratory, NM0890010515,” US Environmental Protection Agency letter to J. Vozella (Chief, Environment, Health, and Safety Branch, DOE-LAAO) from W. Honker (Chief, RCRA Permits Branch, EPA Region 6), Dallas, Texas. (EPA 1994, 35231)

LANL (Los Alamos National Laboratory), May 20, 1994. “Response to Notice of Deficiency Concerning Operable Unit 1157 Field Investigation Work Plan, Work Breakdown Structure Number 1.4.2.6.1.28.1.2,” Los Alamos National Laboratory letter EM/ER:94-J219 to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from D. McInroy (LANL ER Program Acting Program Manager), Los Alamos, New Mexico. (LANL 1994, 38539)

DOE (US Department of Energy), July 21, 1994. “EPA Comments on Work Plans,” US Department of Energy letter LESH:TJT:WORKPLAN:1.4.2.6.1 to H. Jansen (LANL ER Program Manager) from T. Taylor (DOE-LAAO ER Program Manager), Los Alamos, New Mexico. (DOE 1994, 39957)

LANL (Los Alamos National Laboratory), September 20, 1994. “Response to the Envrionmental Protection Agency’s (EPA’s) Draft List of Modifications on the Notice of Deficiency (NOD) Response for Operable Unit (OU) 1157,” Los Alamos National Laboratory letter ER:94-J380 to T. Taylor (DOE-LAAO Program Manager) from J. Jansen (LANL ER Project Manager), Los Alamos, New Mexico. (LANL 1994, 41184)

EPA (US Environmental Protection Agency), October 7,1994. EPA review and approval of RFI work plan for Operable Unit 1157, US Environmental Protection Agency letter to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from A. Davis (Director, Hazardous Waste Management Division, EPA Region 6), Dallas, Texas. (EPA 1994, 43549)

Environmental Restoration Project, April 19, 1996. “Final Accelerated Cleanup Reports,” Los Alamos National Laboratory letter EM/ER:96-220 to B. Garcia (NMED-HRMB) from J. Jansen (LANL ER Program Manager) and T. Taylor (DOE-LAAO Program Manager), Los Alamos, New Mexico. (Environmental Restoration Project 1996, 53775)

6.0 SWMU C-08-010
SITE OF A FORMER DRUM STORAGE STRUCTURE

6.1 Summary

SWMU C-08-010 is the location of a former drum storage area. The site was originally designated as an area of concern rather than a SWMU; but was added to the Laboratory's Hazardous Waste Facility Permit (Table A) in 1994. The RFI for this site included sampling of the soil beneath the former storage area. Analytical results verified that no release of contaminants to the surrounding soil occurred. The RFI report describing the sampling conducted for this SWMU was submitted to NMED on March 15, 1996. SWMU C-08-010 is being proposed for NFA under Criterion 3 (no release).

6.2 Description and Operational History

6.2.1 Site Description

SWMU C-08-010 is the former location of a 6- by 12-ft structure (TA-8-34) that was used for drum storage. The type of structure (i.e., wooden shed; roofed but without walls; pad only) is unknown (LANL ER Records Package 740) (Attachment A).

The drum storage structure was located in TA-8 at Anchor Ranch Site West, approximately 100 ft north of Building TA-8-1, which housed a laboratory and shop (Figure 6.2-1). The drum structure was located at the foot of a stairway that once connected Building TA-8-8, a carpenter shop, with TA-8-1. The storage structure was located immediately east of the stairway and immediately north of an existing storm sewer (Figure 6.2-2).

6.2.2 Operational History

The Anchor Ranch site was the location of some of the earliest Manhattan Project facilities built at Los Alamos. TA-8 (Anchor Ranch Site West) was used in the early to mid-1940s for development of the nuclear weapon known as Little Boy. Structures at TA-8 included buried concrete bunkers and wooden structures used for office space, laboratories, storage, and a carpenter's shop. When TA-8 was established (1949–1950), original ranch buildings were removed to make way for the new construction or were abandoned in place. The technical area was used for gun-firing experiments, x-ray measurements, and explosives development and testing activities.

The exact date of construction of the TA-8-34 drum storage structure is not known. Nearby Building TA-8-1 was constructed in October 1943, and nearby Building TA-8-8 was constructed in March 1944 (Attachment A). It is reasonable to assume that TA-8-34 was built in the same time frame. The structure was removed in approximately 1947 (Attachment A).

TA-8-34 was used for drum storage [Attachment A; Blackwell 1983, 14968 (Attachment B); LASL 1950, 23769 (Attachment C)], but it is not known what the drums contained, if anything. Roy F. Weston, Inc., speculated that the drums contained liquids, such as oils or solvents (DOE 1989, 11971)(Attachment D), and if the drums leaked, semivolatile organic compounds might have been released to the soil. However, a 1983 Health, Safety, and Environment (HSE) Division memorandum (Attachment B) concerning structures removed from TA-8 states that no hazardous materials were stored in structure TA-8-34.

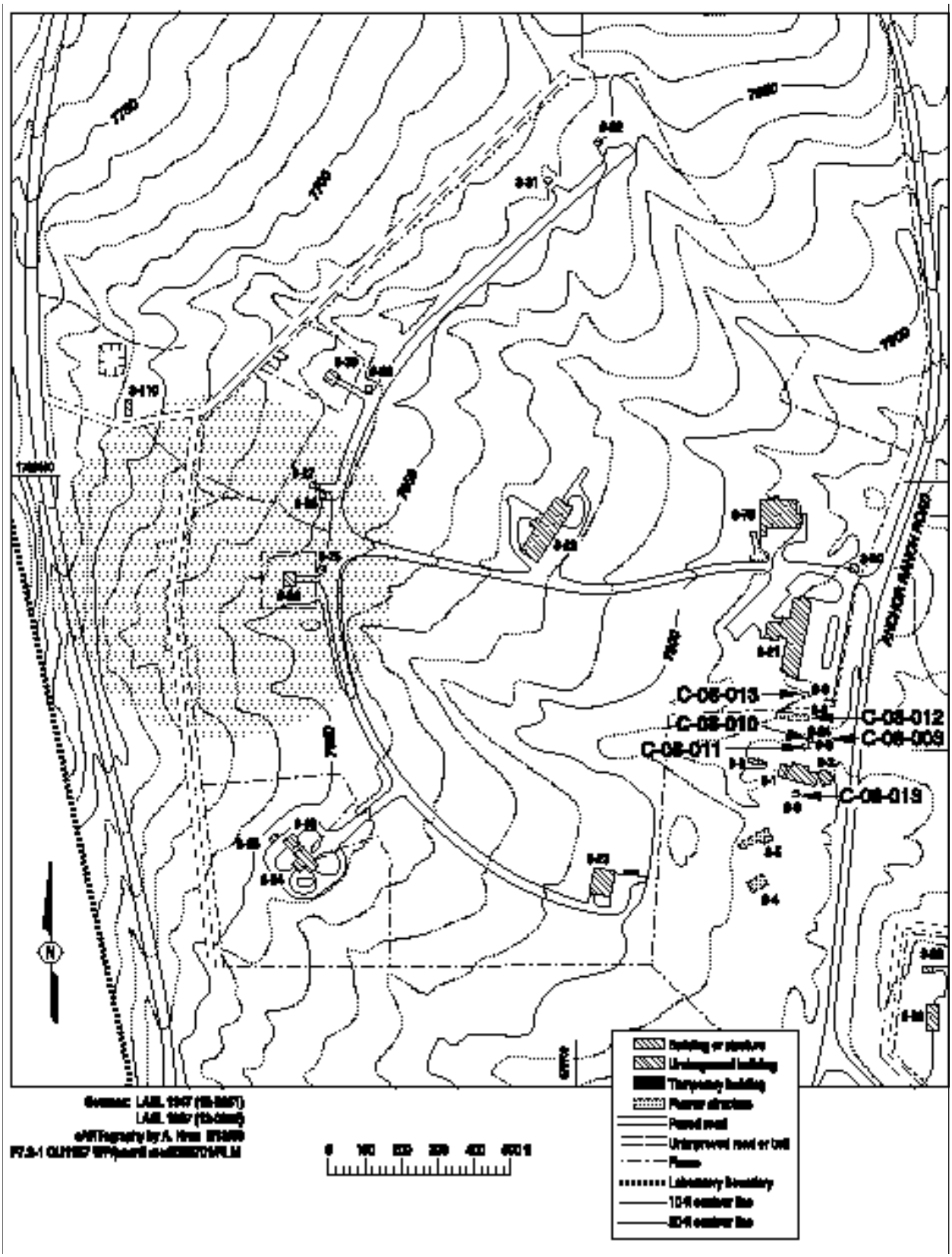

Figure 6.2-1. Locations of SWMU C-08-010 and nearby areas of concern

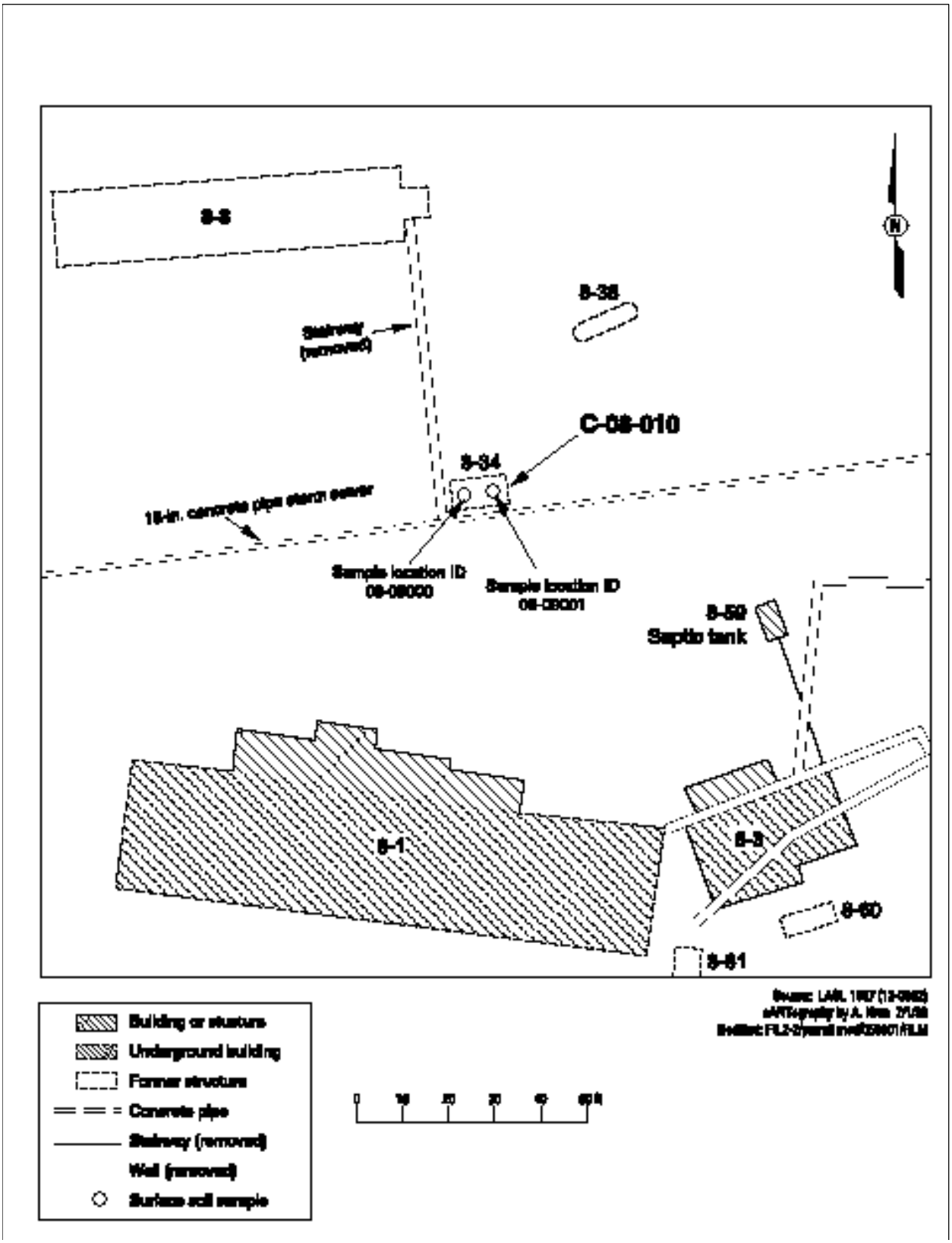

Figure 6.2-2. Location of SWMU C-08-010 and associated sample locations

RFI Activities

The RFI work plan for OU 1157 included a sampling and analysis strategy for SWMU C-08-010 (LANL 1993, 20949 pp. 6-151 through 6-159). The work plan called for four near-surface soil samples (plus 1 field duplicate and 1 field blank) to be taken from two locations. Because the COPCs thought to be present at SWMU C-08-010 included petroleum hydrocarbons and organic chemicals, the work plan specified that the samples be analyzed for total petroleum hydrocarbons (TPH), VOCs, and SVOCs. The samples to be analyzed for TPH and SVOCs were to be collected from a depth interval of 12 to 24 in., and the samples to be analyzed for VOCs were to be collected from a depth of approximately 24 in. Samples were not to be collected from the first 12 in. of soil/sediment because this interval was believed to contain silts/sediments deposited at the site during the forty-plus years since the structure had been removed.

The objective of the RFI for SWMU C-08-010 was to determine whether contamination was present from the possible release of petroleum hydrocarbons and/or organic chemicals. RFI activities conducted for this SWMU are described in detail in the RFI report for TAs-8 and -9 (LANL 1996, 54586).

Four near-surface soil samples (and appropriate quality assurance [QA] samples) were collected on May 5, 1994, from two sample locations (08-09000 and 08-09001) within the boundary of SWMU C-08-010 (Figure 6.2-2). The location of the former drum storage area was covered with a layer of silt approximately 8 to 9 in. thick, which had accumulated over the site since the structure was removed in 1947. A heavy clay soil layer and a few small pieces of asphalt were found below the silt. Because the silt layer was 8 to 9 in. deep, rather than 12 in. deep as speculated in the work plan, adjustments were made in the field to the sampling depths specified in the work plan to compensate for the difference between the actual depth of the silt layer and the speculated depth. As specified in the work plan, the silt layer was removed from both sample locations prior to sample collection. Samples from both locations were collected from the clay layer located beneath the silt layer. The first sample at each location was collected from a depth of approximately 0–4 in. beneath the top surface of the clay layer (8–13 in. beneath the top of the silt layer). The second sample at each location was collected from a depth of approximately 0–6 in. beneath the top surface of the clay layer (8–15 in. beneath the top of the silt layer). All four samples were submitted for SVOC analyses, while only the shallow sample from location 08-09000 and deeper sample from location 08-09001 were submitted for VOC analyses. Field photo iozination screening (PID) detected no VOCs.

TPH was not included in the analytical suite as prescribed in the OU 1157 work plan because the VOC and SVOC analyses would detect the individual volatile and semivolatile components associated with a potential release of petroleum hydrocarbons or organic chemicals. Additionally, there was no odor or visible evidence of hydrocarbon contamination observed at the site during the RFI.

All samples were analyzed using EPA SW-846 methods, or equivalent. Sample results are included as Attachment E (LANL 1994, 52121; LANL 2000, 69656).

Determination of No Release

Analytical results for SWMU C-08-010 (Attachment E) show that VOCs and SVOCs were not detected (i.e., designated by a “U” qualifier which signifies a nondetect), thus indicating that no release from the drum storage area occurred. If residual contamination were present at the site, a number of SVOCs would have been detected because many TPH-related SVOCs do not biodegrade and are persistent in the environment.

NOTE:
On April 5, 1994, EPA gave the RFI work plan a notice of deficiency (NOD) for SWMU C-08-010 (EPA 1994, 35231) because EPA believed that the Laboratory should sample at a depth greater than

24 in. On May 20, 1994, the Laboratory responded that because the exact depth of the sediments deposited since the removal of the building was unknown, sampling would continue at 1-ft intervals as long as field screening instruments continued to detect the presence of COPCs. The Laboratory further responded that the 24-in. depth given in the work plan was a reasonable estimate based on initial visual inspection and actual field conditions. On October 7, 1994, EPA approved the work plan for OU 1157 and the May 20, 1994, response to NOD (EPA 1994, 43549).

On March 11, 1997, NMED issued an NOD (NMED 1997, 57663.5) on the RFI report for SWMU C-08-010 because the depths of the samples collected by the RFI field team varied from sample depths specified in the OU 1157 RFI work plan. On April 16, 1997, the Laboratory provided a response similar to the response previously provided to EPA (which had been acceptable to EPA). However, on November 6, 1997, NMED requested additional sampling at SWMU C-08-010.

As stated in the response to the NMED's request for additional information (RSI) (for which no NMED response was received), the ER Project maintains that no additional sampling is required (ER Project 1998, 57663.3). The 12- to 24-in. sampling depth for SVOCs and the 24-in. sampling depth for VOCs specified in the OU 1157 work plan were based on an estimation of the depth of sediment at this site to be 12 in. The work plan specified that "samples will not be taken from the upper 12 inches of soil because this interval may contain sediments deposited on the site since the building was removed." The intent of the work plan was to sample below the sediment regardless of the actual depth of the sediment. The field investigation found the depth of sediment to vary from 8 to 9 in. Based on actual field information, the depths at which the samples were to be collected were modified in the field. This modification meets the intent of the sampling approach in the work plan because samples were collected in the clay soil found below the deposit of sediments, which accumulated during the 40-plus years since structure TA-8-34 was removed. Because no VOCs or SVOCs were encountered at depths of 13 and 15 in., there is no reason to suspect that COPCs would exist at depths of greater than 15 in. Thus the ER Project has determined that no additional sampling is required because it has demonstrated that there is no indication of a release.

6.3 Land Use

6.3.1 Current

SWMU C-08-010 was located in the central portion of TA-8, an industrial area with high-security restricted access. A chain-link fence topped with barbed wire encloses this technical area. Access through the fence is obtained only by passing through a guard gate. These security measures effectively eliminate the possibility of inadvertent site intrusion.

6.3.2 Future/Proposed

The Laboratory does not anticipate any change from the industrial use with restricted access of TA-8 for the operational life of the Laboratory (LANL 1995, 57224, pp.11–12) (Appendix D, Attachment 1). Thus, this area will remain under institutional control.

6.4 No Further Action Proposal

6.4.1 Rationale

The RFI for SWMU C-08-010 consisted of collecting samples from the soil beneath the site of former structure TA-8-34 to determine whether any contamination was present from a potential leak that may

have occurred from the drums formerly stored at this location. No COPCs were detected in the soils sampled at the former location of structure TA-8-34, SWMU C-08-010.

The Laboratory ER Project submitted to NMED an RFI report for SWMU C-08-010, dated March 15, 1996 (LANL 1996, 54586). The RFI report

- documents all sampling results;
- provides information that no release from SWMU C-08-010 occurred; and
- proposes that this SWMU be considered for NFA.

The Laboratory ER Project received an NOD from NMED because samples were collected from depths of 12 or 15 in. below ground surface rather than the 24-in.-sampling depth specified in the RFI Work Plan for OU 1157. However, adjustments to sampling depths were made in the field to compensate for the difference between the actual depth of the silt layer and the depth speculated in the work plan, and there is no reason to suspect that COPCs exist at a depth greater than 15 in.

Thus the ER Project has demonstrated SWMU C-08-010 has not released RCRA solid or hazardous wastes and/or constituents to the environment. The term “release” means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment.

6.4.2 Criterion

Based on the information presented in Sections 6.2 through 6.4, SWMU C-08-010 is being proposed for NFA under Criterion 3.

6.5 Supporting Documentation Attached

Attachment A: Pages from TA-8 structure history book that include Buildings TA-8-1, TA-8-8, TA-8-34. (LANL ER Records Package 740).

Attachment B: October 31, 1983 memo from Charles D. Blackwell to John Ahlquist. (Blackwell 1983, 14968).

Attachment C: Engineering Drawing R-122, dated 1950. (LASL 1950, 23769)

Attachment D: Site Database, Task 36, Record 16, pp. 49–51. (DOE 1989, 11971)

Attachment E: Relevant excerpts from daily activity log (LANL1994, 52121) and analytical results for samples AAB0888, AAB0889, AAB0890, and AAB0891. (LANL 2000, 69656)

Appendix D, Attachment 1: LANL site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

6.6 References Used for Text of the Request for Permit Modification for SWMU C-08-010

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1157," Los Alamos National Laboratory report LA-UR-93-1230, Los Alamos, New Mexico. (LANL 1993, 20949)

Environmental Restoration Project, March 1996. "RFI Report for Potential Release Sites at TA-8 and TA-9 (located in former Operable Unit 1157) Field Unit 5," Los Alamos National Laboratory report LA-UR-96-418, Los Alamos, New Mexico. (LANL 1996, 54586)

Reference Cited in Text

EPA (US Environmental Protection Agency), April 5,1994. “Notice of Deficiency, Operable Unit 1157, Los Alamos National Laboratory, NM0890010515,” US Environmental Protection Agency letter to J. Vozella (Chief, Environment, Health, and Safety Branch, DOE-LAAO) from W. Honker (Chief, RCRA Permits Branch, EPA Region 6), Dallas, Texas. (EPA 1994, 35231)

EPA (US Environmental Protection Agency), October 7,1994. EPA review and approval of RFI work plan for Operable Unit 1157, US Environmental Protection Agency letter to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from A. Davis (Director, Hazardous Waste Management Division, EPA Region 6), Dallas, Texas. (EPA 1994, 43549)

6.7 History of Regulatory Deliverables

SWMU C-08-010, the location of a former drum storage area, was added to the Laboratory’s Hazardous Waste Facility Permit (Table A) in 1994.

LANL, July 23, 1993:	RFI work plan for OU 1157 submitted to EPA Region 6. (LANL 1993, 20949)
EPA, April 5, 1994:	NOD for OU 1157 RFI work plan (EPA 1994, 35231). Comment 27 applies to SWMU C-08-010.
LANL, May 20, 1994:	Response to NOD for OU 1157 RFI work plan (LANL 1994, 38539). Response 27 applies to SWMU C-08-010.
EPA (via DOE-LAAO), July 21, 1994:	Draft list of modifications for OU 1157 RFI work plan. (DOE 1994, 39957)
LANL, September 20, 1994:	Response to draft list of modifications for OU 1157 RFI work plan. (LANL 1994, 41184)
EPA, October 7, 1994:	Approval of OU 1157 RFI work plan and LANL response to NOD. (EPA 1994, 43549)
LANL, March 15, 1996:	RFI report that includes SWMU C-08-010 submitted to NMED. (ER Project 1996, 54586)
NMED, March 11, 1997:	NOD on RFI report that includes SWMU C-08-010 (NMED 1997, 57663.5). Single deficiency applies to SWMU C-08-010.
LANL, April 16, 1997:	Response to NOD on RFI report that includes SWMU C-08-010. (ER Project 1997, 55647)
NMED, November 6, 1997:	RSI for RFI report that includes SWMU C-08-010 (NMED 1997, 56933). Single deficiency applies to SWMU C-08-010.
LANL, January 12, 1998:	Response to RSI on RFI report that includes SWMU C-08-010. (ER Project 1998, 57663)

6.7.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1157," Los Alamos National Laboratory Report LA-UR-93-1230, Los Alamos, New Mexico. (LANL 1993, 20949)

EPA (US Environmental Protection Agency), April 5,1994. "Notice of Deficiency, Operable Unit 1157, Los Alamos National Laboratory, NM0890010515," US Environmental Protection Agency letter to J. Vozella (Chief, Environment, Health, and Safety Branch, DOE-LAAO) from W. Honker (Chief, RCRA Permits Branch, EPA Region 6), Dallas, Texas. (EPA 1994, 35231)

LANL (Los Alamos National Laboratory), May 20, 1994. "Response to Notice of Deficiency Concerning Operable Unit 1157 Field Investigation Work Plan, Work Breakdown Structure Number 1.4.2.6.1.28.1.2," Los Alamos National Laboratory letter EM/ER:94-J219 to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from D. McInroy (LANL ER Program Acting Program Manager), Los Alamos, New Mexico. (LANL 1994, 38539)

DOE (US Department of Energy), July 21, 1994. "EPA Comments on Work Plans," US Department of Energy letter LESH:TJT:WORKPLAN:1.4.2.6.1 to H. Jansen (LANL, EM/ER Program Manager) from T. Taylor (DOE-LAAO ER Program Manager), Los Alamos, New Mexico. (DOE 1994, 39957)

LANL (Los Alamos National Laboratory), September 20, 1994. "Response to the Envrionmental Protection Agency's (EPA's) Draft List of Modifications on the Notice of Deficiency (NOD) Response for Operable Unit (OU) 1157," Los Alamos National Laboratory letter ER:94-J380 to T. Taylor (DOE-LAAO Program Manager) from J. Jansen (LANL ER Project Manager), Los Alamos, New Mexico. (LANL 1994, 41184)

EPA (US Environmental Protection Agency), October 7,1994. EPA review and approval of RFI work plan for Operable Unit 1157, US Environmental Protection Agency letter to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from A. Davis (Director, Hazardous Waste Management Division, EPA Region 6), Dallas, Texas. (EPA 1994, 43549)

Environmental Restoration Project, March 1996. "RFI Report for Potential Release Sites at TA-8 and TA-9 (located in former Operable Unit 1157), Field Unit 5," Los Alamos National Laboratory report LA-UR-96-418, Los Alamos, New Mexico. (Environmental Restoration Project 1996, 54586)

NMED (New Mexico Environment Department, March 11, 1997. "Notice of Deficiency, RCRA Facility Investigation Report for Potential Release Sites in Technical Areas 8 and 9 Los Alamos National Laboartory,NM0890010515," New Mexico Environment Department letter, Santa Fe, New Mexico. (New Mexico Environmental Department 1997, 57663.5)

Environmental Restoration Project, April 16, 1997. "Response to the NOD for the RFI Report for TAs-8 and 9 PRS C-8-010 (Former Operable Unit 1157," Los Alamos National Laboratory letter EM/ER:97-111, Los Alamos, New Mexico. (Environmental Restoration Project 1997, 55647)

NMED (New Mexico Environment Department, November 6, 1997. "Request for Supplemental Information, RCRA Facility Investigation Report, Technical Areas 8 and 9 Los Alamos National Laboartory, NM0890010515," New Mexico Environment Department letter, Santa Fe, New Mexico. (New Mexico Environmental Department 1997, 56933)

Environmental Restoration Project, January 12, 1998. "Response to Request for Supplemental Information on the RFI Report for TAs-8 and 9 (Former OU 1157)," Los Alamos National Laboratory letter EM/ER:98-103, Los Alamos, New Mexico. (Environmental Restoration Project 1998 57663)

7.0 SWMU 14-003
FORMER BURN AREA FOR HIGH EXPLOSIVE DEBRIS

7.1 Summary

SWMU 14-003 is an area formerly used to burn detonation debris contaminated by HE. The Laboratory ER Project conducted an RFI at this SWMU in 1995. Based on the results of the RFI, the ER Project implemented a VCA. The VCA plan for this site was presented to NMED for comment at a January 29, 1997, meeting. At that meeting, NMED concurred with the ER Project's plans to proceed with this VCA, with the stipulation that surface soil samples in addition to those specified in the VCA plan be collected. VCA activities were conducted from April to July of 1997 and involved sampling to determine the extent of contamination, removing contaminated soil, and collecting confirmation samples to verify that clean up goals were met. Confirmation sampling verified that residual contamination is at concentrations that do not pose an unacceptable level of risk under current and projected future land use. Although the VCA completion report was completed in September 1997, it was not submitted to NMED because of a reprioritization of sites during a reorganization of the ER Project. The VCA report is included as part of this request for permit modification for this SWMU. Because an ecological screening methodology was not in place at the time the VCA report was prepared, a subsequent ecological screening evaluation for SWMU 14-003 was conducted in the summer of 1999. The ecological evaluation determined that there is no unacceptable risk to ecological receptors from this site. SWMU 14-003 is being proposed for NFA under Criterion 5 (the site was remediated in accordance with state and/or federal regulations).

7.2 Description and Operational History

7.2.1 Site Description

The SWMU 14-003 burn area was located near the southeastern corner of TA-14, approximately 300 ft northeast of Building TA-14-5 (Figure 7.2-1). The SWMU was located at the end of an abandoned asphalt-paved road and was used for burning HE-contaminated debris remaining from experimental test shots. Prior to VCA activities, the SWMU consisted of a level 5- by 20-ft grass-covered area, enclosed on its north, south, and west sides by a 3-ft-high, horseshoe-shaped earthen berm (Figure 7.2-2), and several charred remnants of noncombustible debris were visible at the site.

7.2.2 Operational History

In 1944, Building TA-14-5 was constructed as a control building for a nearby firing site. Group X-1D, the Rotating Prism Camera Group, was the principal group that operated in this building during the war years. The group used pyramid and mirror cameras to photograph detonation tests on small HE cylinders and spheres. These photographic methods provided shadow photographs of imploding explosives during detonation of various HE formulations or lens types. Only relatively small tests (up to 15 lb) were conducted at the firing site. The explosive devices contained HE, uranium, and various other metals. Small-scale testing continued to occur during the post-war years.

In approximately 1952 (LASL 1950, 23936; LASL 1952, 69698) (Attachment A), the SWMU 14-003 burn area was established to burn combustible HE-contaminated debris and to flash-burn noncombustible HE-contaminated debris that resulted from the Group X-ID experimental test shots. According to the SWMU report (LANL 1990, 07512), the burn area ceased being used during the 1960s.

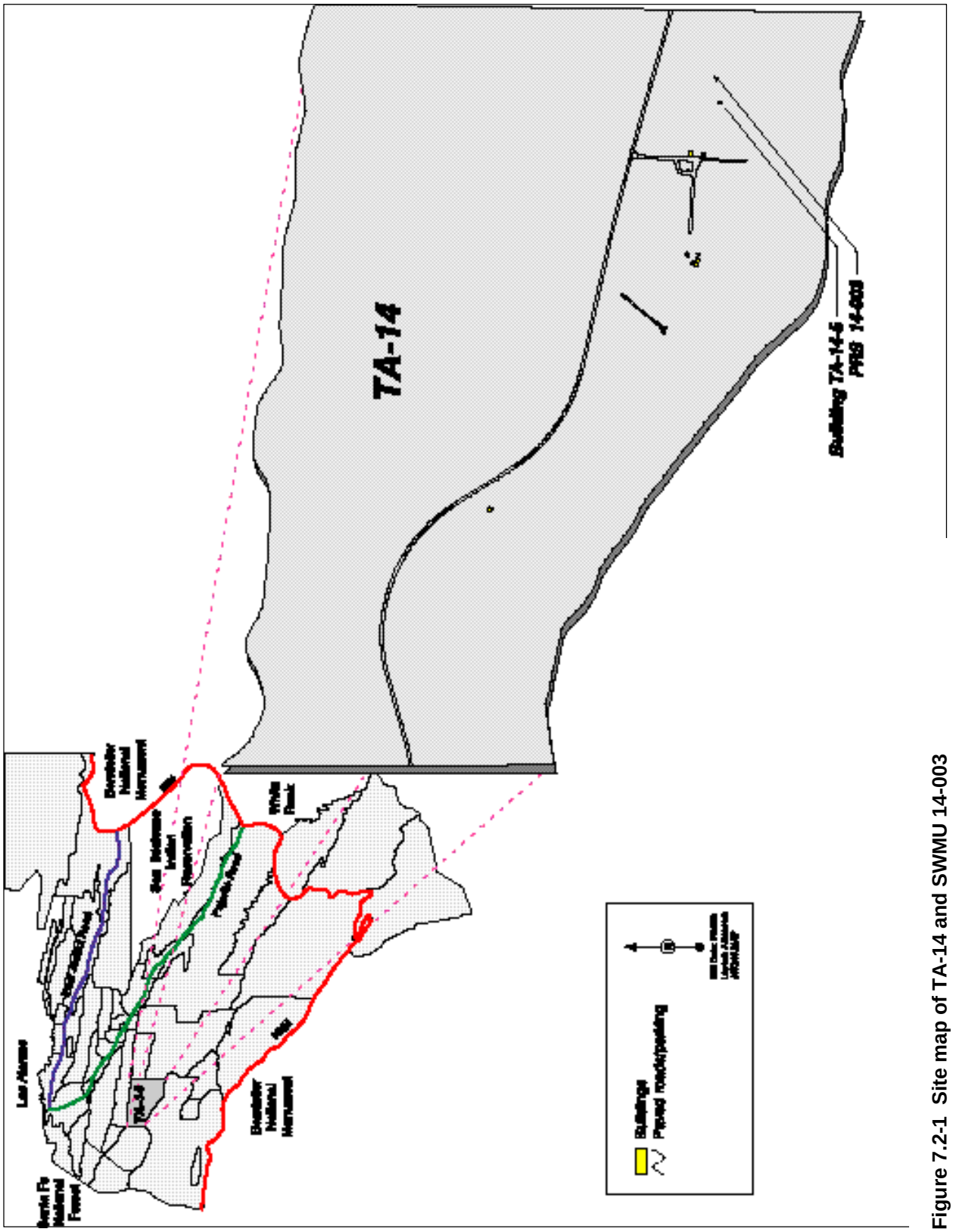

Figure 7.2-1 Site map of TA-14 and SWMU 14-003

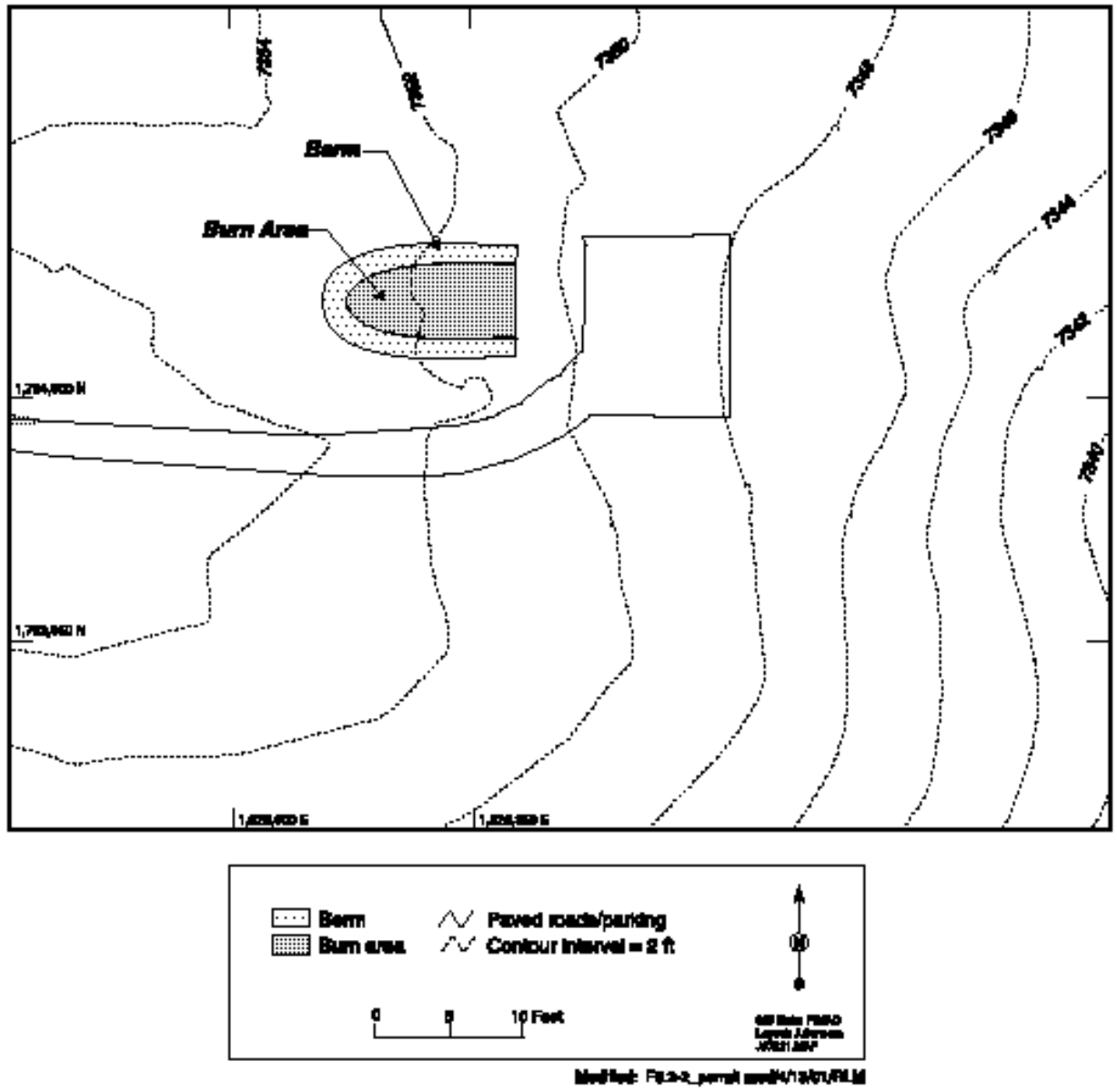

Figure 7.2-2. SWMU 14-003, former burn area for high explosives

7.3 Land Use

7.3.1 Current

SWMU 14-003 was located within TA-14, an industrial area with high-security restricted access. A chain-link fence topped with barbed wire encloses this technical area. Access through the fence is obtained only by passing through a guard gate. These security measures effectively eliminate the possibility of inadvertent site intrusion.

7.3.2 Future/Proposed

The Laboratory does not anticipate any change in land use at TA-14 from industrial use with restricted access for the operational life of the Laboratory (LANL 1995, 57224, pp.11–12) (Appendix D, Attachment 1). Thus, this area will remain under institutional control.

7.4 Investigation Activities

7.4.1 Summary

An RFI was conducted at SWMU 14-003 in 1995. Based on the RFI results, the ER Project implemented a VCA at the site in 1997. A complete and detailed discussion of all investigation activities is presented in the VCA report for the SWMU 14-003 burn area (Environmental Restoration Project 1997, 56564), included as Attachment B of this request. A summary of those activities is presented in Sections 7.4.1 through 7.4.3 of this request for permit modification.

7.4.2 Investigation #1: RFI Investigation of SWMU 14-003

The RFI completed for SWMU 14-003 in July 1995 was designed to determine if the area encompassed by the earthen berm was contaminated from the burning activities formerly conducted at this site.

7.4.2.1 Nonsampling Data Collection

No nonsampling data collection was conducted.

7.4.2.2 Sampling Data and Collection

Field personnel collected two samples from near the center of the grassy area within the berm at a depth of 0–12 in. (using the hand-auger technique). Samples collected were submitted to a fixed analytical laboratory for gamma spectroscopy and analyses for total and isotopic uranium, HE, SVOCs, and metals.

7.4.2.3 Data Gaps

Although no data gaps, per se, were identified in the RFI report for SWMU 14-003 (Environmental Restoration Project 1996, 54086), the extent of contamination at SWMU 14-003 was not determined in the RFI.

7.4.2.4 Results and Conclusions

The RFI found that the following inorganic chemicals were above their respective background values (BVs): antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, silver, uranium, and zinc; and that the following radionuclides were above their respective BVs: uranium-235 and uranium-238. The following organics were detected: 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, and RDX. Of these, antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, RDX, silver, uranium, and zinc were also above their respective SALs (EPA 1995, 53970) and, therefore, were identified as COPCs.

Although the RFI analytical results for SWMU 14-003 indicated the presence of soils contaminated with HE and metals, the extent of contamination could not be determined because no samples were collected from the berm or from outside of the bermed area. Based on these results, a VCA was planned to determine the extent of the soil contamination at this site and to excavate and remove the contaminated soils.

7.4.3 Investigation #2: VCA Remediation of SWMU 14-003

VCA activities for SWMU 14-003 were conducted from April 10 through July 18, 1997 (ER Project 1997, 56564) (Attachment B). Field activities for this VCA were conducted in accordance with the NMED-approved VCA Plan (Environmental Restoration Project 1996, 55250). Based on expected land use at the site (i.e., industrial, continued Laboratory use), preliminary remediation goals (PRGs) were calculated for the 12 COPCs identified in the RFI risk-based screening assessment (see Section 7.6.2.1).

7.4.3.1 Nonsampling Data Collection

The nonsampling data collection consisted of extensive field screening data collected prior to VCA remediation. Field screening was conducted for HE, metals, and radionuclides. A 34- by 28-ft grid with 2-ft-square intervals was placed over the burn area and the surrounding earthen berm. Various field-screening samples were collected from the center of each 2-ft interval. Laser-induced breakdown spectroscopy (LIBS) screening was used to determine concentrations of barium, lead, and manganese in relation to PRGs. As expected from the historical use of this site and the results of the RFI, the LIBS screening detected several areas where lead exceeded PRGs, primarily in the center of the burn area. Neither manganese nor barium exceeded PRGs in any screening sample. LIBS screening of the top and inner face of the berm surrounding the burn area indicated this area to be free of metal contaminants.

Each grid sample was screened for radioactivity using an Eberline pancake probe and tested for HE using the Laboratory's Dynamic Experimentation (DX) Division HE spot test kit. No radiation was detected above background at any location. One grid location (#240) tested positive with the HE spot test kit. Subsequently, this grid location was excavated until HE soil testing yielded no positive results.

To comply with NMED's request that the area outside of the berm be screened for contaminants, additional LIBS, radiological, and HE screenings (i.e., in addition to screening locations specified in the VCA plan) were conducted outside of the berm. The results of these screenings confirmed that no contamination existed outside of the berm and that no migration of metals or other contaminants occurred in the downgradient drainage extending from the mouth of the berm.

A performance evaluation sample, which consisted of US Geological Survey rock # GXR-2, was analyzed along with the samples from SWMU 14-003 to verify the accuracy and precision of the LIBS. The Z-test for two sample means to compare the measured results with the known standard showed no significant differences between the measured values of lead and barium and the certified values; however, the

manganese results were biased high by approximately 350 ppm. The manganese bias did not affect screening decisions regarding the remediation for two reasons: (1) the highest concentration recorded (5849 ppm manganese at grid location 266) was well below the PRG of 7800 ppm and (2) excavation was performed in grid 266 because lead was above the PRG of 1000 ppm in that grid.

Based on the screening results, a 3-ft-10-in.- by 3-ft-6-in.-area, which included grid square 240, was excavated to a depth of 2.5 ft to remove HE-contaminated soil, and grid squares 265, 266, 267, and 291 were excavated to a depth of 3 ft to remove lead-contaminated soil. The total volume of excavated soil was 19 yd^3.

7.4.3.2 Sampling Data Collection

On July 15, 1997, after VCA soil removal was completed at SWMU 14-003, 15 confirmation samples (including 3 field duplicates) were collected from 12 surface locations to determine if any residual metals, HE, or isotopic uranium remained. Samples were submitted for fixed analytical laboratory analysis of the target analyte metals, HE, and isotopic uranium.

The only deviation from the VCA plan occurred during confirmation sampling. The VCA plan specified the collection of 12 confirmatory samples, all from the center of a 5-ft grid located in the burn area. However, field personnel deviated from the VCA plan and collected samples not only from the center of the burn area, but also from the surrounding berm and at locations outside of the berm. Field personnel determined that additional confirmation sampling locations were required to adequately confirm that contamination was heterogeneously distributed as determined during field screening, that no runoff contaminant transportation occurred at the mouth of the berm, and that the berm consisted of clean soil suitable for placement into excavated areas.

Fifteen confirmation samples were collected from twelve surface locations: nine from 0–6 in., one from 0–8 in., three from 0–10 in., and two from 0–12 in. Seven samples were collected from the depression formed by the excavation of the burn area; two were collected at the mouth of the burn area; two were collected downgradient at 80 ft southeast and 100 ft east from the mouth of the burn area; and four samples were collected from the berm surrounding the burn area. The sample locations (with detected analytes) are presented in Figure 7.4-1.

7.4.3.3 Data Gaps

There were no data gaps associated with the VCA of SWMU 14-003. Sufficient data were collected to adequately determine nature and extent (horizontal and vertical) of contamination.

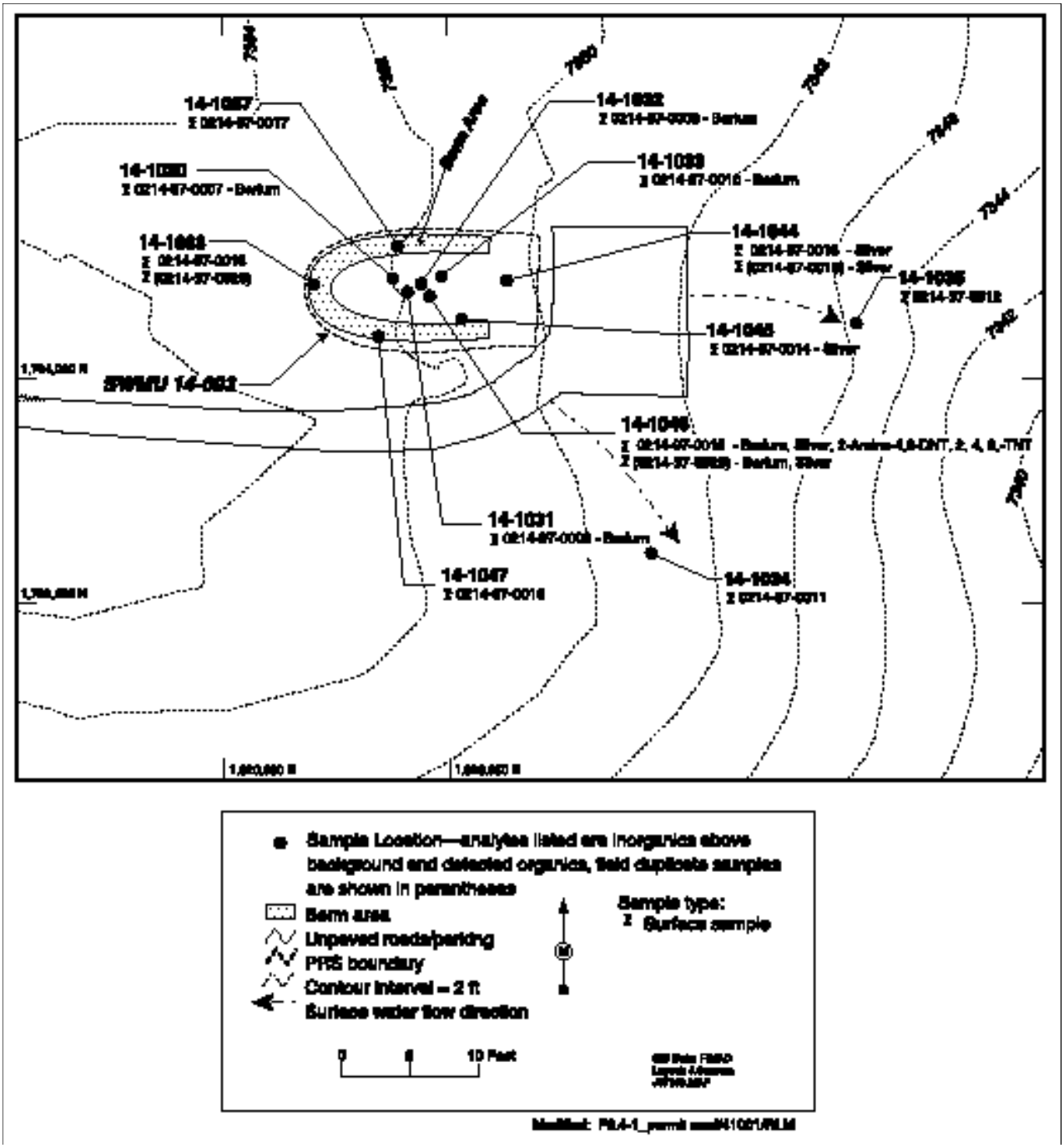

Figure 7.4-1. SWMU 14-003, site map of sample locations with detected analytes

7.4.3.4 Results and Conclusions

The VCA determined that contamination was confined to the 5- by 20-ft area encompassed by the earthen berm. In the confirmation samples taken from the surface soil within the burn area, barium was detected above its then current BV of 315 mg/kg in five samples at concentrations ranging from 330 to 1800 mg/kg. Silver was also detected in three samples at concentrations ranging from 0.6 to 2.0 mg/kg. (At the time the VCA report was prepared, there was no BV for silver; the current BV for silver is 1 mg/kg.) All other inorganic chemicals were detected at concentrations below their respective BVs. Isotopic uranium was detected below its BV.

Two HEs, 2,4,6-trinitrotoluene and 2-amino-4,6 dinitrotoluene (a degradation product of 2,4,6-TNT), were detected in one confirmation sample at concentrations of 0.13 and 0.11 mg/kg, respectively (both at concentrations below their respective PRGs of 64 and 680 mg/kg); the 2,4,6-trinitrotoluene was not detected in the RFI sampling. RDX, which was detected in the RFI, was not detected in the confirmation samples.

After receipt of the confirmation sampling results demonstrating that berm soils were free of contaminants, two feet of soil was removed from the berm and used to fill in the areas excavated from the burn area. The site was regraded and a mixture of native grass seed was applied. A best management practice (BMP) in the form of straw bales was put in place to prevent runoff from the site until vegetation from reseeding established itself to 75% of the vegetation cover that had been present prior to remediation. The BMP was monitored and maintained until vegetation reached this point.

7.5 Site Conceptual Model

SWMU 14-003 was an area for burning HE-contaminated debris remaining from experimental test shots conducted at TA-14. The primary release of contaminants was via deposition of burned residue.

7.5.1 Nature and Extent of Contamination

Prior to the VCA, the extent of any contamination (HE and metals) at SWMU 14-003 was assumed to be confined to the burn area within the earthen berm. VCA field screening and contamination sampling confirmed that the extent of contamination was, indeed, confined to this area and therefore defined. The confirmation samples verified that all COPCs were below the PRGs provided in the NMED-approved VCA Plan, and that the levels of residual contamination that remain at the site are well below their respective SALs; thus presenting no unacceptable risk to human (or ecological) receptors.

7.5.2 Environmental Fate

The physiochemical properties of the detected metals and HE compounds cause them to bind to soil and move via transport of soil particles by water as opposed to moving as dissolved chemicals in water or moving in air because of volatilization. HE compounds are also susceptible to bio- and photolytic degradation. Based on these factors and the low erosion potential at this site (see Section 7.6.4.1 of this request), it is unlikely that any residual contamination present at SWMU 14-003 has the potential for off-site migration (as verified by the two VCA confirmation samples [14-1034 and -1035] collected downgradient from the mouth of the burn area).

7.6 Site Assessments

7.6.1 Summary

A complete and detailed discussion of the human health screening assessment is presented in the VCA report for the SWMU 14-003 burn area (Attachment B), included in this request for permit modification and summarized below in Section 7.6.2.1. A complete and detailed discussion of the ecological screening assessment is presented in the ecological screening evaluation for SWMU 14-003 (Attachment C), included in this request and summarized below in Section 7.6.2.2.

7.6.2 Screening Assessments

The VCA remediation of the SWMU 14-003 burn area reduced the number and concentrations of contaminants from those found during the original RFI. The VCA also determined that contamination was localized and confined to the 5- by 20-ft burn area encompassed by the earthen berm. Within this area, the data review of VCA confirmation samples indicated that two metals (barium and silver) were detected above their BVs and two HE compounds (2,4,6-trinitrotoluene and 2-amino-4,6-dinitrotoluene) were also detected. These four compounds were subjected to an ecological evaluation.

7.6.2.1 Human Health

Because TA-14 will remain under Laboratory control, the future land use for SWMU 14-003 will remain industrial. Therefore, exposure potential was evaluated using the industrial worker scenario, which assumes that people will be working at the site 8 hours a day, 250 days of the year for 25 years. The exposure pathways identified were inhalation, incidental ingestion, and dermal contact of contaminated soil.

Based on expected land use at the site (i.e., industrial, continued Laboratory use), PRGs were calculated for the 12 COPCs identified in the RFI risk-based screening assessment (antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, RDX, silver, uranium, zinc). PRGs were calculated using the modified EPA equations and input parameters presented in EPA Region 9 PRG tables (EPA 1995, 53970).

The VCA confirmatory sampling results for SWMU 14-003 yielded nondetects for antimony, cadmium, and RDX. Arsenic, chromium, copper, lead, manganese and uranium were detected, but at concentrations well below their respective BVs. Zinc was detected within the range of the background data set (Longmire et al. 1995, 52227, Table 7) and, therefore, was considered to be indistinguishable from background. Within the burn area only, barium was greater than its BV of 315 mg/kg in 5 of the 15 confirmation samples (at concentrations ranging from 330–1800 mg/kg). These concentrations are well below the industrial cleanup level of 100,000 mg/kg for barium and also well below the SAL (based on residential exposure) for barium (5300 mg/kg). The data review also indicated that, within the burn area only, silver was detected in 3 of the 15 confirmation samples (at concentrations ranging from 0.6 – 2.0 mg/kg). These concentrations are well below the industrial cleanup level of 8500 mg/kg for silver and also well below the SAL (based on residential exposure) for silver (380 mg/kg). Because the maximum concentrations of barium (1800 mg/kg) and silver (2.0 mg/kg) are well below the industrial PRGs of 100,000 mg/kg and 8500 mg/kg, respectively, these metals were eliminated as COPCs.

Two HE compounds (2,4,6-trinitrotoluene and 2-amino-4,6-dinitrotoluene) were also detected in one confirmatory sample from within the burn area. The 2,4,6-trinitrotoluene was detected at a concentration of 0.11 mg/kg and the 2-amino-4,6-dinitrotoluene was detected at a concentration of 0.13 mg/kg. The

0.11 mg/kg detected concentration of 2,4,6-trinitrotoluene is well below its industrial PRG of 64 mg/kg and also well below its SAL (based on residential exposure) of 15 mg/kg. Thus, this HE compound is not retained as a COPC. Because there is no SAL for 2-amino-4,6-dinitrotoluene, 2,6-dinitrotoluene (with a SAL of 65 mg/kg) is used as a surrogate. (If a chemical compound has no SAL, the SAL of a compound with a similar chemical structure may be used as a surrogate SAL.) Because the 0.13 mg/kg detected concentration of 2-amino-4,6-dinitrotoluene is well below its industrial PRG of 680 mg/kg and its surrogate SAL of 65 mg/kg, 2-amino-4,6-dinitrotoluene is also not retained as a COPC.

The confirmation sample analytical results verify that the VCA was successful in reducing concentrations of human health COPCs at SWMU 14-003 to concentrations below risk-based industrial cleanup levels and residential screening levels (EPA 1995, 53970). Because the human health risk screening assessment determined that no unacceptable risk to human health is present at this SWMU, a human health risk assessment is not required.

7.6.2.2 Ecological

The purpose of an ecological screening evaluation is to identify chemicals of potential ecological concern (COPECS) and not to calculate risk. The evaluation involves the calculation of hazard quotients (HQs) and hazard indices (HIs) for all COPCs identified in the data review and all appropriate ecological screening receptors as described in "Screening Level Ecological Risk Assessment Methods" (Environmental Restoration Project 1999, 63303.2). The HQ analysis is based on the maximum detected concentration or detection limit for each COPC and is calculated by dividing these values by the soil ESL for the nine receptors. The derivation of ESLs is based on the approach presented in the ER Project's ecological risk assessment methodology document (Environmental Restoration Project 1999, 63303.2) and the June 1999 version of the ER ECORISK database (LANL 1999, 64161), which is part of LANL ER Records Package 186. The screening receptors for which ESLs have been derived include the plant, invertebrate, deer mouse, vagrant shrew, desert cottontail, American robin, American kestrel, and the red fox. The rationale for using these receptors is presented in the ER Project's ecological risk assessment methodology document (Environmental Restoration Project 1999, 63303.2).

An HI is the sum of HQs across contaminants with like effects for a given screening receptor. An HQ or HI greater than 1.0 is considered to be an indicator of potential adverse impacts. Chemicals resulting in an HQ greater than 1.0 or that contribute more than 0.1 to an HI greater than 1.0 are identified as COPECs. An ecological assessment is designed to be conservative (i.e., some assumptions may not represent actual conditions) in order to minimize the possibility of eliminating an analyte that may pose a potential ecological risk.

Because the maximum HQs for 2,4,6-trinitrotoluene and 2-amino-4,6-dinitrotoluene are less than 1, these compounds do not meet the definition of a COPEC and are not considered further. However, the maximum HQs for barium and silver are greater than 1; thus these compounds are considered COPECs and are further evaluated using HI analysis.

HI analysis indicated that HIs are greater than 1.0 for the plant, deer mouse, shrew, cottontail, robin, and kestrel and less than 1.0 for the red fox. Because there are no earthworm ESLs for barium and silver, the earthworm was not considered for HI analysis. The HIs greater than 1.0 are driven by barium, except for the plant, which is driven by silver.

Although residual elevated levels of barium and silver remain in the burn area, the ecological receptors of concern have home ranges much larger than this area. The burn area and its surrounding berm covers approximately 1250 ft^2 or 0.3 acre. The home range of the small terrestrial vertebrate receptors identified for this SWMU range from 0.5 to 3 acres. The other wildlife receptors identified for this SWMU have much

larger home ranges. As a result, exposure to the elevated concentrations of barium and silver would be infrequent. In addition, the area containing residual contamination has been covered with 2–3 ft of clean soil, making residual contamination even less accessible to receptors. Grasses and wildflowers have re-vegetated the site since the completion of VCA activities. Based on the localized nature of the residual contamination, the re-colonization of the vegetative community, and the depth at which the residual contamination has been covered, the Laboratory believes that there is no potential for adverse ecological impacts to ecological receptors.

Because the ecological risk screening assessment determined that no unacceptable risk to ecological receptors is present at this SWMU, an ecological risk assessment is not required.

7.6.3 Risk Assessments

7.6.3.1 Human Health

Based on the elimination of all COPCs in the human health screening assessment for SWMU 14-003, no human health risk assessment was necessary.

7.6.3.2 Ecological

Based on the elimination of all COPECs in the ecological screening assessment for SWMU 14-003, no ecological risk assessment was necessary.

7.6.4 Other Applicable Assessments

7.6.4.1 Surface Water

The ER Project has developed a procedure to assess sediment transport and erosion concerns at individual SWMUs. It provides a basis for prioritizing and scheduling actions to control the erosion of potentially contaminated soils at specific SWMUs. The procedure is a two-part evaluation. Part A is a compilation of existing analytical data for the SWMU, site maps, and knowledge-of-process information. Part B is an assessment of the erosion/sediment transport potential at a SWMU. Erosion potential is numerically rated from 1 to 100 using a matrix system. SWMUs that score below 40 have a low erosion potential; those that score from 40 to 60 have a medium erosion potential; and those that score above 60 have a high erosion potential.

As part of the VCA, SWMU 14-003 was regraded and reseeded. A BMP in the form of straw bales was put in place to prevent runoff from the site until vegetation from reseeding established itself to 75% of the vegetation cover prior to remediation. The BMP was monitored and maintained until vegetation reached this point.

A surface water assessment for SWMU 14-003 was conducted on October 6, 1997 after VCA activities had been completed. The assessment resulted in an erosion matrix score of 31.4 (with straw BMPs in place), indicating that the site has low erosion potential.

The assessment found no debris in any nearby watercourse. There are no man-made or natural hydraulic structures or features that might affect the hydrology of the site. Interflow is not a suspected pathway for contaminant migration because of the relatively insoluble nature of metals. Therefore, the results of the surface water assessment indicated little potential for contaminant transport via surface water or sediment.

There are no wetlands or springs in the vicinity of SWMU 14-003.

7.6.4.2 Groundwater

SWMU 14-003 presents no potential pathway for contaminant release to groundwater. The regional aquifer is approximately 875–1100 ft below the ground surface at TA-14 and well below the vertical extent of contamination at SWMU 14-003, which was defined. There are no active or inactive local water supplies and no production wells in the vicinity of SWMU 14-003.

7.6.4.3 Underground Storage Tank

This section is not applicable.

7.6.4.4 Other

This section is not applicable.

7.7 No Further Action Proposal

The VCA plan for this site was presented to the NMED for comment at a January 29, 1997, meeting. At that meeting, NMED concurred to proceed with this VCA, with the stipulation that additional surface soil samples be collected outside of the bermed area (Koch 1997, 66771) (Attachment D). Although the VCA completion report (Attachment B) was completed in September 1997, it was not submitted to NMED because of a reprioritization of sites due to an ER Project reorganization. Because an ecological screening methodology was not in place at the time the VCA report was completed, the VCA report contains no ecological screening assessment. However, an ecological screening evaluation for SWMU 14-003 was conducted during the summer of 1999 (Attachment C).

7.7.1 Rationale

The VCA for SWMU 14-003 consisted of collecting samples to determine the extent of contamination, removing approximately 19 yds^3 of contaminated soils from the burn area and from the surrounding berm, and collecting samples to confirm that cleanup goals were met. In addition, the site was regraded and reseeded, and BMPs were put in place to prevent runoff from leaving the site.

The VCA completion report

- documents all cleanup activities and sampling results;
- states that the nature and extent of contamination for SWMU 14-003 was adequately defined;
- states that confirmation sampling performed at SWMU 14-003 verified that residual contamination is at concentrations that pose no unacceptable level of risk under current and projected future land use; and
- proposes that this SWMU be considered for NFA because the site was successfully remediated based on human health concerns.

The 1999 ecological screening evaluation conducted for SWMU 14-003

- states that, based on the localized nature of the residual contamination, the re-colonization of the vegetative community, and the depth of the residual barium and silver, SWMU 14-003 has no potential for adverse impacts to ecological receptors.

The Laboratory ER Project is proposing SWMU 14-003 for NFA because this SWMU

- has been successfully remediated, as reported in the VCA completion report;
- poses no risk to human health, as reported in the VCA completion report; and
- poses no potential adverse impacts to ecological receptors, as reported in the ecological screening evaluation.

7.7.2 Criterion

Based on the information presented in Sections 7.2 through 7.7, SWMU 14-003 is being proposed for NFA under Criterion 5.

7.8 Supporting Documentation Attached

Attachment A:	LASL Engineering Drawings ENG 4-R129 (LASL 1950, 23936); ENG R-129 (LASL 1952, 69698)
Attachment B:	ER Project VCA completion report for SWMU 14-003. (ER Project 1997, 56564)
Attachment C:	Mirenda memo to file, ecological screening for SWMU 14-003. (Mirenda 2000, 66772)
Attachment D:	Koch minutes for the January 29, 1997, NMED-HRMB and LANL monthly meeting. (Koch 1997, 66771)
Appendix D, Attachment 1:	LANL site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

7.9 References Used for Text of the Request for Permit Modification for SWMU 14-003

Environmental Restoration Project, February 19, 1996. “RFI Report for Potential Release Sites at TA-14 and TA-12/67 (located in Former Operable Unit 1085,” Los Alamos National Laboratory report LA-UR-96-511, Los Alamos, New Mexico. (Environmental Restoration Project 1996, 54086)

Environmental Restoration Project, September 1997. “Voluntary Corrective Action Report for Potential Release Site 14-003, Burn Area,” Los Alamos National Laboratory report LA-UR-97-3870, Los Alamos, New Mexico. (Environmental Restoration Project 1997, 56564)

Mirenda, R., August 2000. “Ecological Screening Evaluation for PRS 14-003,” Los Alamos National Laboratory, Los Alamos, New Mexico. (Mirenda 2000, 66772)

References Cited in Text

Environmental Restoration Project, November 1996. “Voluntary Corrective Action Plan for Potential Release Site 14-003, Burn Area,” Los Alamos National Laboratory report LA-UR-97-3984, Los Alamos, New Mexico. (Environmental Restoration Project 1996, 55250)

Environmental Restoration Project, December 1999. “Screening Level Ecological Risk Assessment Methods, December 1999,” Los Alamos National Laboratory report LA-UR-99-1405, Los Alamos, New Mexico. (Environmental Restoration Project 1999, 63303.2)

EPA (Environmental Protection Agency), September 1, 1995. “Region IX Preliminary Remediation Goals (PRGs) Second Half 1995,” San Francisco, California. (EPA 1995, 53970)

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. II of IV, Los Alamos National Laboratory report LA-UR-90-3400, Los Alamos, New Mexico. (LANL 1990, 07512)

LANL (Los Alamos National Laboratory), June 1999. "LANL ECORISK Database (DB)," Los Alamos National Laboratory zip diskette, LANL ER Records Package 186, Los Alamos, New Mexico. (LANL 1999, 64161)

Longmire, P.A., D. E. Broxton, and S. L. Reneau (Eds.), October 1995. "Natural Background Geochemistry and Statistical Analysis of Selected Soil Profiles, Sediments, and Bandelier Tuff, Los Alamos, New Mexico," Los Alamos National Laboratory report LA-UR-95-3468, Los Alamos, New Mexico. (Longmire et al. 1995, 52227)

7.10 History of Regulatory Deliverables

ER Project, February 15, 1996:	Submittal of RFI report for Technical Areas 12, 14, and 67. (ER Project 1996, 54085)
NMED, August 16, 1996:	NOD on RFI report for Technical Areas 12, 14, and 67. (NMED 1996, 59154)
ER Project, October 15, 1996:	Response to the NOD on RFI report for Technical Areas 12, 14, and 67. (ER Project 1996, 55045)
ER Project, November 6, 1996:	Submittal of VCA plan for PRS 14-003 to HWB. (ER Project 1996, 55250)
NMED, January 29, 1997:	NMED verbal approval of VCA plan for PRS 14-003. (Koch 1997, 66771)
ER Project, September 1997:	VCA completion report for PRS 14-003 submitted to HWB as Attachment B of this request. (ER Project 1997, 56564)

7.10.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), February 15, 1996. "Submittal of the Resource Conservation and Recovery Act (RFI) Report for Potential Release Sites (PRSs) at Technical Areas (TAs) 14 and 12/67 (located in Former Operable Unit 1085)," Los Alamos National Laboratory letter EM/ER:96-062 to D. Neleigh (EPA Region 6) from J. Jansen (ER Program Manager) and T. Taylor (LAAO Program Manager), Los Alamos, New Mexico. (LANL 1996, 54085)

NMED (New Mexico Environment Department), August 16, 1996. "Notice of Deficiency, RCRA Facility Investigation Report, Technical Areas 12, 14, 67, Los Alamos National Laboratory (NM 0890010515)," New Mexico Environment Department document, Santa Fe, New Mexico. (NMED 1996, 59154)

LANL (Los Alamos National Laboratory), October 15, 1996. "Response to the NOD for TAs-12, -14, and -67 for RFI Report (Former Operable Unit 1085)," Los Alamos National Laboratory report, Los Alamos, New Mexico. (LANL 1996, 55045)

Environmental Restoration Project, November 1996. "Voluntary Corrective Action Plan for Potential Release Site 14-003, Burn Area," Los Alamos National Laboratory report LA-UR-97-3984, Los Alamos, New Mexico. (Environmental Restoration Project 1996, 55250)

Koch, B., January 31, 1997. "January 29, 1997, Meeting Minutes, NMED-HRMB and LANL Monthly Technical Meeting," US Department of Energy-Los Alamos Area Office, Los Alamos, New Mexico (Koch 1997, 66771)

Environmental Restoration Project, September 1997. "Voluntary Corrective Action Report for Potential Release Site 14-003, Burn Area," Los Alamos National Laboratory report LA-UR-97-3870, Los Alamos, New Mexico. (Environmental Restoration Project 1997, 56564)

8.0 SWMU 15-010(c)
ACTIVE STORM DRAINLINE AND OUTFALL

8.1 Summary

SWMU 15-010(c) consists of an active storm drainline that channels stormwater from the exterior of Building TA-15-92 toward its associated outfall at the edge of Water Canyon. The stormwater line was mistakenly identified as a sanitary sewer line in the Comprehensive Environmental Assessment Response Program (CEARP) report and subsequently, the SWMU report. No solid or hazardous wastes or constituents were ever managed in Building TA-15-92. SWMU 15-010(c) is being proposed for NFA under NFA Criterion 2 (the site has never been used for the management of solid or hazardous waste and/or constituents).

8.2 Description and Operational History

8.2.1 Site Description

SWMU 15-010(c) (Figure 8.2-1) is a steel drainline that runs 105 ft south from a stair landing at Building TA-15-92, a camera firing point, toward its associated outfall. Laboratory Engineering Drawings ENG 4 C-942 (sheet 1 of 6) (LASL 1950, 70002) (Attachment A) and ENG-R 719 (sheet 29 of 29) (LASL 1958, 24005)(Attachment B) show a discrepancy regarding whether the drainline is of 3-in. or of 5-in. diameter.

The SWMU report (LANL 1990, 07512, p. 15-010)(Attachment C) states that, based on Engineering Drawing ENG-R 716 (sheet 26 of 29) (LASL 1958, 24002) (Attachment D), the CEARP describes SWMU 15-010(c) as a sanitary sewer that served the camera firing point, Building TA-15-92. However, a close inspection of ENG-R-716 shows the drainline detail for Building TA-15-31 rather than for Building TA-15-92. It is easy to see how the mistake was made because the configuration of each building and its nearby roads are similar and could easily be mistaken for one another. Additionally, under the “NOTES” section on p. 15-010 (Attachment C), the SWMU report states that new information on SWMU 15-010(c) suggests that this unit is actually a storm drain and therefore should not be considered a SWMU.

In 1993–1994, Santa Fe Engineering conducted a study to identify building drain piping, locate outfalls, and characterize wastewater flows and sources that existed throughout the Laboratory at the time of the study. Drain piping was verified by dye checking. The Santa Fe Engineering study shows that Building TA-15-92 contains no drains of any kind. (Santa Fe Engineering 1994, 20981) (Attachment E).

8.2.2 Operational History

The SWMU 15-010(c) drainline collects only stormwater from the stair landing on the south side of Building TA-15-92 and channels it to an outfall at the edge of Water Canyon. The stair landing is below grade and requires a drain to prevent stormwater from flooding it during storm events.

Engineering Drawing ENG 4 C-942 (sheet 1 of 6) (Attachment A) demonstrates that this drain line has been in place from the time of Building TA-15-92’s construction in 1950.

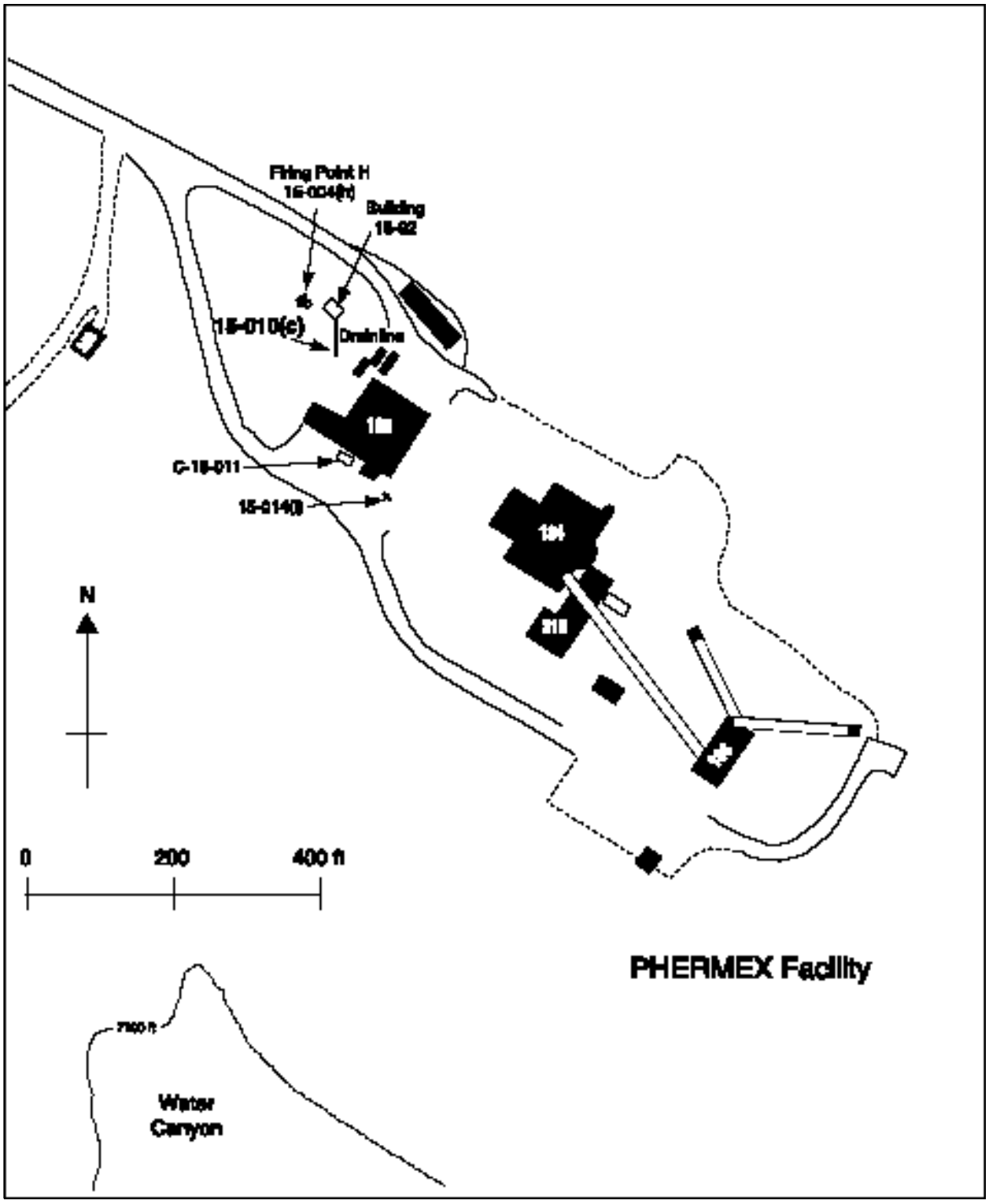

Figure 8.2-1. Site diagram of PHERMEX facility, showing PRSs and nearby structures

8.3 Land Use

8.3.1 Current

TA-15 is an industrial area used for the research, development, and testing of high explosives. It is a high-security, restricted access area enclosed by a chain-link fence topped with barbed wire. Access to TA-15 is obtained only by passing through a security guard station. These security measures effectively eliminate the possibility of inadvertent site intrusion.

8.3.2 Future/Proposed

The Laboratory does not anticipate any change from the industrial restricted-access use of TA-15 for the operational life of the Laboratory (LANL 1995, 57224, pp.11–12)(Appendix D, Attachment 1). Future industrial use of this TA will continue the research, development, and testing of high explosives.

8.4 No Further Action Proposal

8.4.1 Rationale

Based on documented information, the ER Project has demonstrated that

- since its installation in 1950, SWMU 15-010(c) has always been and currently is an active stormwater drainline serving an exterior stair landing at Building TA-15-92, and
- no drains exist within Building TA-15-92.

Thus the ER Project has demonstrated that SWMU 15-010(c) was never used for the management (that is, generation, treatment, storage or disposal) of RCRA solid or hazardous wastes and/or constituents.

8.4.2 Criterion

Based on the information presented in Sections 8.2 through 8.4.1, SWMU 15-010(c) is proposed for NFA under NFA Criterion 2.

8.5 Supporting Documentation Attached

Attachment A:	LASL Engineering Drawing ENG 4 C-942 (sheet 1 of 6). (LASL 1950, 70002)
Attachment B:	LASL Engineering Drawing ENG-R 719 (sheet 29 of 29). (LASL 1958, 24005)
Attachment C:	Relevant page from the SWMU report. (LANL 1990, 07512, p. 15-010)
Attachment D:	Engineering Drawing ENG-R 716 (sheet 26 of 29). (LASL 1958, 24002)
Attachment E:	Relevant page from the wastewater stream characterization report for TA-15-92, 1994 update. (Santa Fe Engineering 1994, 20981)
Appendix D, Attachment 1:	LANL site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

8.6. Reference Used for Text of the Request for Permit Modification for SWMU 15-010(c)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1086," Los Alamos National Laboratory Report LA-UR-92-3968, Los Alamos, New Mexico, p. 8-26. (LANL 1993, 20946)

8.7 History of Regulatory Deliverables

LANL, July 2, 1993:	RFI work plan for OU 1086 submitted to EPA Region 6. (LANL 1993, 20946)
EPA, July 26, 1994:	NOD for OU 1086 RFI work plan. (EPA 1994, 40380)
LANL, August 24, 1994:	Response to NOD for OU 1086 RFI work plan. (LANL 1994, 40595)
EPA, October, 1994:	List of modifications for OU 1086 RFI work plan transmitted to LANL (EPA 1994). Letter not found, but the list is included in our December 12, 1994 response to the letter.
LANL (via DOE/LAAO), December 12, 1994:	Response to list of modifications for OU 1086 RFI work plan. (DOE 1994, 45291)
EPA, January 9, 1995:	Approval of OU 1086 RFI work plan, LANL response to NOD, and modifications. (EPA 1995, 52910.102)
LANL, May 20, 1996:	RFI report for PRSs in TA-15 submitted to NMED. (LANL 1996, 54977)
NMED, June 11, 1997:	NOD for RFI report for PRSs in TA-15. (NMED 1997, 59155)
LANL, July 18, 1997:	Response to NOD for RFI report for PRSs in TA-15. (LANL 1997, 56292)
NMED, July 30, 1997:	Denial of RFI report for PRSs in TA-15. (NMED 1997, 56519)
LANL, August 24, 1998:	Response to July 30, 1997, denial of RFI report for PRSs in TA-15 (LANL 1998, 59483) and withdrawal of report.
NMED, October 15, 1998:	Approval of request for withdrawal and approval of extension for revised RFI report. (NMED 1998, 62322)

8.7.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), July 1993. “RFI Work Plan for Operable Unit 1086,” Los Alamos National Laboratory report LA-UR-93-3968, Los Alamos, New Mexico, p. 8-26. (LANL 1993, 20946)

EPA (US Environmental Protection Agency), July 26, 1994. “Notice of Deficiency, RFI Work Plan OU 1086, Los Alamos National Laboratory NM0890010515,” EPA letter to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from W. Honker, P.E. (Chief, RCRA Permits Branch, EPA Region 6), Dallas, Texas. (EPA 1994, 40380)

LANL (Los Alamos National Laboratory), August 24, 1994. “Notice of Deficiency (NOD) Response for Operable Unit 1086 Resource Conservation and Recover Act (RCRA) Facility Investigation (RFI) Work Plan,” Los Alamos National Laboratory letter ER:94-J351 to T. Taylor (DOE-LAAO) from J. Jansen (Project Manager, Environmental Restoration Project), Los Alamos, New Mexico. (LANL 1994, 40595)

DOE (US Department of Energy), December 12, 1994. "List of Modifications for the Operable Unit (OU) 1086 Resource Conservation and Recovery Act Facility Investigation Work Plan," DOE letter LAAMEP:7TT-057 to W. Honker (Chief, RCRA Permits Branch, Hazardous Waste Management Division, EPA Region 6) from T. Taylor (Program Manager, Environmental Restoration Program, DOE-LAAO), Los Alamos, New Mexico. (DOE 1994, 45291)

EPA (US Environmental Protection Agency), January 9, 1995. Review and approval of RFI Work Plan for Operable Unit 1086, EPA letter to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from A. Davis (Director, Hazardous Waste Management Division, EPA Region 6), Dallas, Texas. (EPA 1995, 52910.102)

LANL (Los Alamos National Laboratory), May 20, 1996. "Submittal of the Resource Conservation and Recovery Act Facility Investigation (RFI) Report for Potential Release Sites (PRSs) in Technical Area (TA) 15," Los Alamos National Laboratory letter EM/ER:96-278 to B. Garcia (NMED-HRMB) from J. Jansen (Program Manager, Environmental Restoration Project) and T. Taylor (Program Manager, DOE-LAAO), Los Alamos, New Mexico. (LANL 1996, 54977)

NMED (New Mexico Environment Department), June 11, 1997. "Notice of Deficiency and Request for Workplan Modification, RCRA Facility Investigation Report, Technical Area 15, Los Alamos National Laboratory NM0890010515," NMED letter to G.T. Todd (Area Manager, DOE-LAAO) from B. Garcia (Chief, Hazardous and Radioactive Materials Bureau, NMED), Santa Fe, New Mexico. (NMED 1997, 59155)

LANL (Los Alamos National Laboratory), July 18, 1997. "Response to NOD and Request for Workplan Modification on RFI Report Dated May 1996 for LANL LA-UR-96-278, for TA 15," Los Alamos National Laboratory letter EM/ER:97-274 to B. Garcia (NMED-HRMB) from J. Jansen (Program Manager, LANL/ER Project) and T. Taylor (Program Manager, DOE/LAAO), Los Alamos, New Mexico. (LANL 1997, 56292)

NMED (New Mexico Environment Department) July 30, 1997. "Denial of RCRA Facility Investigation Report and Response to Notice of Deficiency, Technical Area 15 (dated May 1996), Los Alamos National Laboratory NM0890010515," NMED letter to G.T. Todd (Area Manager, DOE-LAAO) and S. Hecker (Director, Los Alamos National Laboratory) from R.S. Dinwiddie (Manager, RCRA Permits Management Program, NMED-HRMB), Santa Fe, New Mexico. (NMED 1997, 56519)

LANL (Los Alamos National Laboratory), August 24, 1998. "Response to Denial of RFI Report and NOD Response for TA-15 (Former OU 1086, FU 2)," Los Alamos National Laboratory letter EM/ER:98-298 to R.S. Dinwiddie (NMED-HRMB) from J. Canepa (Program Manager, Environmental Restoration Project) and T. Taylor (Program Manager, DOE/LAAO), Los Alamos, New Mexico. (LANL 1997, 59483)

NMED (New Mexico Environment Department), October 15, 1998. "Request for Withdrawal, TA-15 RCRA Facility Investigation Report and Notice of Deficiency, Los Alamos National Laboratory (LANL) NM0890010515," NMED letter to T. Taylor (Project Manager, DOE-LAAO) and J. C. Browne, Director, Los Alamos National Laboratory) from B. Garcia (Chief, Hazardous and Radioactive Materials Bureau, NMED), Santa Fe, New Mexico. (NMED 1998, 62322)

9.0 SWMU 15-014(l)
ACTIVE NPDES-PERMITTED OUTFALL AND ASSOCIATED DRAINLINE

9.1 Summary

SWMU 15-014(l) is an active outfall and associated drainline from a cooling tower located at TA-15. The outfall is National Pollutant Discharge Elimination System (NPDES) permitted and, as such, regulated by EPA under the Clean Water Act. Other than antiscalants, no additives were introduced into the noncontact cooling water that discharged from the cooling tower. SWMU 15-014(l) is being proposed for NFA under NFA Criterion 4 (the site is regulated in accordance with another state and/or federal authority and is not known or suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment).

9.2 Description and Operational History

9.2.1 Site Description

SWMU 15-014(l) is an active cooling tower outfall located at TA-15 approximately 25 ft south of Building TA-15-185, the control building for the Pulsed, High-Energy, Radiographic Machine Emitting X-rays (PHERMEX) facility's accelerator (Figure 9.2-1).

9.2.2 Operational History

Noncontact cooling water is discharged from cooling tower TA-15-202, flows through the SWMU 15-014(l) drainline, and discharges into Water Canyon from the SWMU 15-014(l) outfall (NPDES 03A028).

Other than Formulas 2010 (consisting of 2-phosphono-1,2,4-butane-tricarboxylic acid) and 2011 (consisting of 2-phosphono-1,2,4-butane-triboxylic acid and benzotriazole), which are antiscalants and corrosion inhibitors, no additives are/were introduced into the water that discharges from the cooling tower (Nonno 2000, 69707; Garnett-Callahan 1993, 69708; Garnett-Callahan 1997, 69709) (Attachment A). Attachment B (Rhodes 1993, 63188) is included as verification that hexavalent chromium was not added to the water at cooling tower TA-15-202. Hexavalent chromium was used at three Laboratory facilities only (TA-2, TA-16, and TA-3 [SM-38]), all associated with power plants.

9.3 Land Use

9.3.1 Current

TA-15 is an industrial area used for the research, development, and testing of high explosives. It is a high-security, restricted-access area enclosed by a chain-link fence topped with barbed wire. Access to TA-15 is obtained only by passing through a security guard station. These security measures effectively eliminate the possibility of inadvertent site intrusion.

9.3.2 Future/Proposed

The Laboratory does not anticipate any change from the industrial restricted-access use of TA-15 for the operational life of the Laboratory (LANL 1995, 57224, pp.11-12)(Appendix D, Attachment 1). Future industrial use of this TA will continue to be research, development, and testing of high explosives.

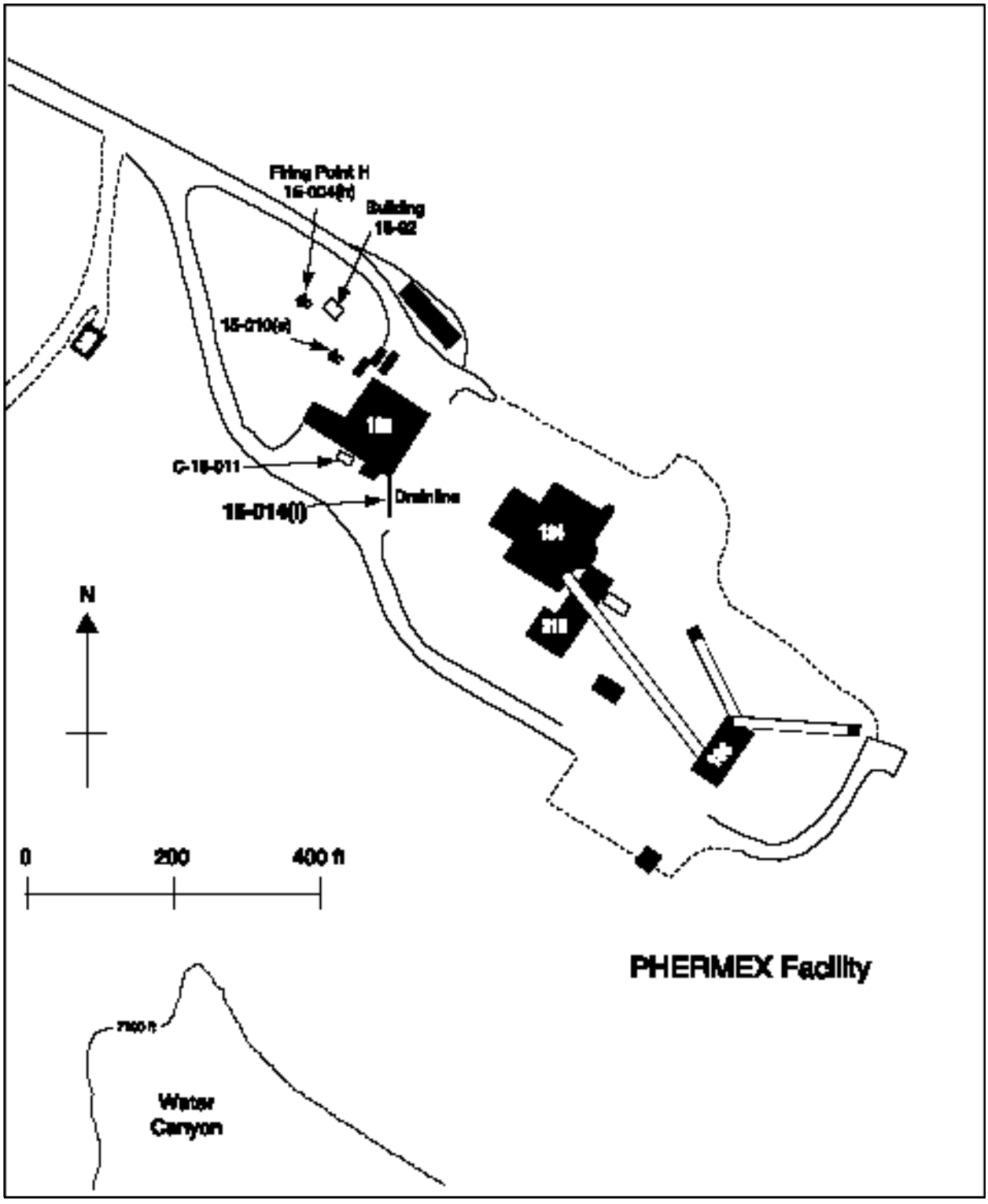

Figure 9.2-1 Site diagram of PHERMEX facility, showing PRSs and nearby structures

9.4 No Further Action Proposal

9.4.1 Rationale

Antiscalant/corrosion inhibitors (2-phosphono-1,2,4-butane-triboxylic acid and benzotriazole) were the only substances added to the noncontact cooling water at cooling tower TA-15-202. These additives do not meet the definition of RCRA hazardous wastes and/or constituents provided in 40 CFR 261.3, "Definition of Hazardous Waste."

SWMU 15-014(m) (associated with Building TA-16-306), a drainline and NPDES-permitted outfall with an operational history identical to that of SWMU 15-014(l), was previously removed by NMED-HRMB (now NMED-HWB) from Module VIII of the Laboratory's Hazardous Waste Facility Permit. SWMU 15-014(m) was removed from the permit under an NFA Criterion 4 justification. The December 23, 1998, letter approving the removal of this SWMU (NMED 1998, 63042) is included as Attachment C of this request for permit modification.

The Laboratory ER Project is proposing SWMU 15-014(l) for NFA because

- the SWMU is NPDES-permitted outfall 03A028 regulated by EPA under the Clean Water Act;
- the antiscalant/corrosion inhibitors added to the noncontact cooling water at cooling tower TA-15-202 do not fit the definition of RCRA hazardous wastes and/or constituents; and
- HWB removed a similar SWMU [15-014(m)] from Module VIII of the Laboratory's Hazardous Waste Facility Permit in December 1998.

9.4.2 Criterion

Based on the information presented in Sections 9.2 through 9.4, SWMU 15-014(l) is being proposed for NFA under Criterion 4.

9.5 Supporting Documentation Attached

Attachment A: Nonno memorandum regarding use of antiscalants (Nonno 2000, 69707) and material safety data sheets (2) for additives to water at cooling tower TA-16-202. (Garnett-Callahan 1993, 69708; Garnett-Callahan 1997, 69709)

Attachment B: Rhodes memorandum regarding use of chromates at the Laboratory. (Rhodes 1993, 63188)

Attachment C: NMED approval letter removing 99 SWMUs from LANL's Hazardous Waste Facility Permit. (NMED 1998, 63042)

Appendix D, Attachment 1: LANL site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

9.6 Reference Used for Text of the Request for Permit Modification for SWMU 15-014(l)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1086," Los Alamos National Laboratory Report LA-UR-92-3968, Los Alamos, New Mexico, p. 8-26. (LANL 1993, 20946)

9.7 History of Regulatory Deliverables

LANL, July 2, 1993:	RFI work plan for OU 1086 submitted to EPA Region 6. (LANL 1993, 20946)
EPA, July 26, 1994:	NOD for OU 1086 RFI work plan. (EPA 1994, 40380)
LANL, August 24, 1994:	Response to NOD for OU 1086 RFI work plan. (LANL 1994, 40595)
EPA, October, 1994:	List of modifications for OU 1086 RFI work plan transmitted to LANL. (EPA 1994). Letter not found, but the list is included in our December 12, 1994, response to the letter.
LANL (via DOE/LAAO), December 12, 1994:	Response to list of modifications for OU 1086 RFI work plan. (DOE 1994, 45291)
EPA, January 9, 1995:	Approval of OU 1086 RFI work plan, LANL response to NOD, and modifications. (EPA 1995, 52910.102)
LANL, May 20, 1996:	RFI report for PRSs in TA-15 submitted to NMED. (LANL 1996, 54977)
NMED, June 11, 1997:	NOD for RFI report for PRSs in TA-15. (NMED 1997, 59155)
LANL, July 18, 1997:	Response to NOD for RFI report for PRSs in TA-15. (LANL 1997, 56292)
NMED, July 30, 1997:	Denial of RFI report for PRSs in TA-15. (NMED 1997, 56519)
LANL, August 24, 1998:	Response to July 30, 1997, denial of RFI report for PRSs in TA-15 (LANL 1998, 59483) and withdrawal of report.
NMED, October 15, 1998:	Approval of request for withdrawal and approval of extension for revised RFI report. (NMED 1998, 62322)

9.7.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), July 1993. “RFI Work Plan for Operable Unit 1086,” Los Alamos National Laboratory Report LA-UR-93-3968, Los Alamos, New Mexico, p. 8-26. (LANL 1993, 20946)

EPA (US Environmental Protection Agency), July 26, 1994. “Notice of Deficiency, RFI Work Plan OU 1086, Los Alamos National Laboratory NM0890010515,” EPA letter to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from W. Honker, P.E. (Chief, RCRA Permits Branch, EPA Region 6), Dallas, Texas. (EPA 1994, 40380)

LANL (Los Alamos National Laboratory), August 24, 1994. “Notice of Deficiency (NOD) Response for Operable Unit 1086 Resource Conservation and Recover Act (RCRA) Facility Investigation (RFI) Work Plan,” Los Alamos National Laboratory letter ER:94-J351 to T. Taylor (DOE-LAAO) from J. Jansen (Project Manager, Environmental Restoration Project), Los Alamos, New Mexico. (LANL 1994, 40595)

DOE (US Department of Energy), December 12, 1994. “List of Modifications for the Operable Unit (OU) 1086 Resource Conservation and Recovery Act Facility Investigation Work Plan,” DOE letter LAAMEP:7TT-057 to W. Honker (Chief, RCRA Permits Branch, Hazardous Waste Management Division, EPA Region 6) from T. Taylor (Program Manager, Environmental Restoration Program, DOE-LAAO), Los Alamos, New Mexico. (DOE 1994, 45291)

EPA (US Environmental Protection Agency), January 9, 1995. Review and approval of RFI Work Plan for Operable Unit 1086, EPA letter to J. Vozella (Chief, Environment, Safety, and Health Branch, DOE-LAAO) from A. Davis (Director, Hazardous Waste Management Division, EPA Region 6), Dallas, Texas. (EPA 1995, 52910.102)

LANL (Los Alamos National Laboratory), May 20, 1996. "Submittal of the Resource Conservation and Recovery Act Facility Investigation (RFI) Report for Potential Release Sites (PRSs) in Technical Area (TA) 15," Los Alamos National Laboratory letter EM/ER:96-278 to B. Garcia (NMED-HRMB) from J. Jansen (Program Manager, Environmental Restoration Project) and T. Taylor (Program Manager, DOE-LAAO), Los Alamos, New Mexico. (LANL 1996, 54977)

NMED (New Mexico Environment Department), June 11, 1997. "Notice of Deficiency and Request for Workplan Modification, RCRA Facility Investigation Report, Technical Area 15, Los Alamos National Laboratory NM0890010515," NMED letter to G.T. Todd (Area Manager, DOE-LAAO) from B. Garcia (Chief, Hazardous and Radioactive Materials Bureau, NMED), Santa Fe, New Mexico. (NMED 1997, 59155)

LANL (Los Alamos National Laboratory), July 18, 1997. "Response to NOD and Request for Workplan Modification on RFI Report Dated May 1996 for LANL LA-UR-96-278, for TA 15," Los Alamos National Laboratory letter EM/ER:97-274 to B. Garcia (NMED-HRMB) from J. Jansen (Program Manager, LANL/ER Project) and T. Taylor (Program Manager, DOE/LAAO), Los Alamos, New Mexico. (LANL 1997, 56292)

NMED (New Mexico Environment Department) July 30, 1997. "Denial of RCRA Facility Investigation Report and Response to Notice of Deficiency, Technical Area 15 (dated May 1996), Los Alamos National Laboratory NM0890010515," NMED letter to G.T. Todd (Area Manager, DOE-LAAO) and S. Hecker (Director, Los Alamos National Laboratory) from R.S. Dinwiddie (Manager, RCRA Permits Management Program, NMED-HRMB), Santa Fe, New Mexico. (NMED 1997, 56519)

LANL (Los Alamos National Laboratory), August 24, 1998. "Response to Denial of RFI Report and NOD Response for TA-15 (Former OU 1086, FU 2)," Los Alamos National Laboratory letter EM/ER:98-298 to R.S. Dinwiddie (NMED-HRMB) from J. Canepa (Program Manager, Environmental Restoration) and T. Taylor (Program Manager, DOE/LAAO), Los Alamos, New Mexico. (LANL 1997, 59483)

NMED (New Mexico Environment Department), October 15, 1998. "Request for Withdrawal, TA-15 RCRA Facility Investigation Report and Notice of Deficiency, Los Alamos National Laboratory (LANL) NM0890010515," NMED letter to T. Taylor (Project Manager, DOE-LAAO) and J. C. Browne, Director, Los Alamos National Laboratory) from B. Garcia (Chief, Hazardous and Radioactive Materials Bureau, NMED), Santa Fe, New Mexico. (NMED 1998, 62322)

10.0 SWMUs 16-025(e2, f2, h2) POTENTIAL SOIL CONTAMINATION FROM FORMER HE STORAGE BUILDINGS

10.1 Summary

SWMUs 16-025(e2, f2, h2) were identified as areas of possible soil contamination from three former Laboratory storage buildings (magazines) that were removed in 1950. Archival evidence indicates that there has never been a release of contaminants. The former sites of all three storage magazines are currently located either under State Highway 501 or under disturbed soils adjacent to the road. SWMUs 16-025(e2, f2, h2) are being proposed for NFA under NFA Criterion 3 (no release).

10.2 Description and Operational History

10.2.1 Site Description

SWMUs 16-025(e2, f2, h2) were identified as areas of possible surface soil contamination from three former Laboratory storage magazines. All three storage magazines were located at S-Site, in TA-16 (Figure 10.2-1). Each storage magazine was 6 ft by 6 ft by 7 ft high and of wood frame construction. SWMU 16-025(e2) was designated structure number TA-16-106 (formerly A-1); SWMU 16-025(f2), TA-16-107 (formerly A-2); and SWMU 16-025(h2), TA-16-109 (formerly A-4). (LANL ER Records Package 730, Attachment A)

10.2.2 Operational History

The SWMU 16-025(e2, f2, h2) storage magazines were constructed in May of 1944 for product storage purposes. Structure TA-16-106 was removed in August 1949, and Structures TA-16-107 and TA-16-109 were removed in November 1950. (Attachment A)

According to a former site safety officer that worked at the Laboratory from 1944 to 1979, Structures TA-16-106, -107, and -109 were mainly used for the storage of non-HE materials such as aluminum powder, lead oxide, and barium nitrate. These structures were also used for the storage of HE, but for a brief period of time only, possibly for 1–1.5 years after they were first built (Martin and Hickmott 1994, 52964.268)(Attachment B). During this 1–1.5 time frame, HE (in packaged form) was placed in one of these buildings while awaiting transfer to one of S-Site's HE-processing buildings for machining and shaping. Once processed, finished HE forms were placed in one of these buildings, while awaiting transfer off-site. No open packages or loose HE was stored in these structures (Attachment B), and no machining or shaping of HE was ever conducted in these buildings. A thorough archival search resulted in no documented cases of a release to the environment of any of the materials stored in these structures.

By November 1950, all three buildings had been removed in preparation for the construction of State Highway 501. Building removal was accomplished through explosive demolition or burning, both common practices for decommissioning and decontaminating buildings at S-Site during the late 1940s through the mid- to late 1960s. The former locations of all three of these buildings currently lie either beneath State Highway 501 or beneath disturbed soils adjacent to the road. Road construction activities severely disturbed surrounding soils and obliterated the (surface) footprints of these former buildings. In addition, during road construction activities, several feet of excavated soil and/or base course and asphalt were placed over the former locations of these buildings. State Highway 501 is elevated and fully graded for drainage.

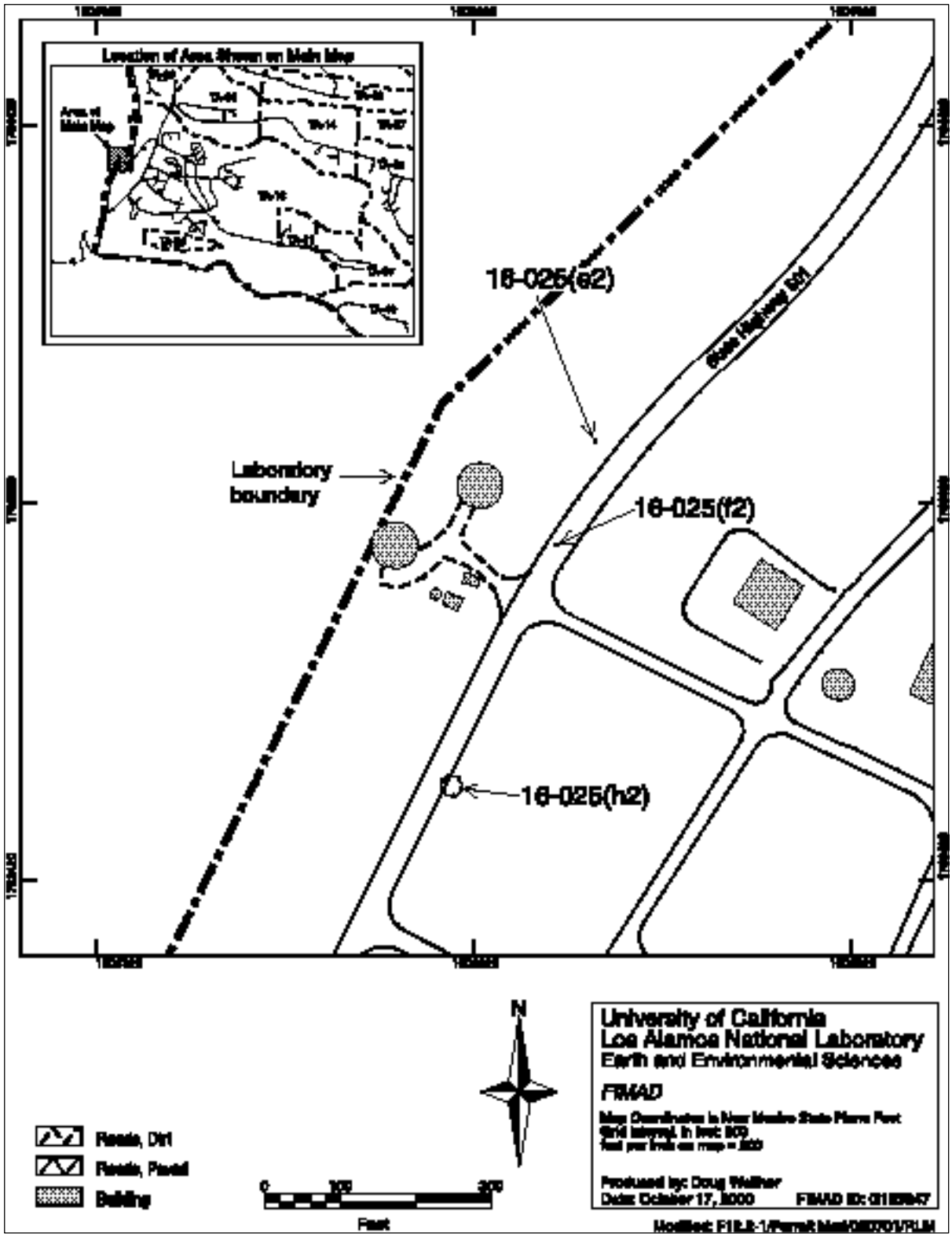

Figure 10.2-1. Locations of SWMUs 16-025(e2, f2, and h2)

10.3 Land Use

10.3.1 Current

The former locations of SWMUs 16-025(e2, f2, h2) are beneath or adjacent to State Highway 501. State Highway 501 is bordered by Santa Fe National Forest on the west and by Laboratory property on the east. Neither the road nor the area in the immediate vicinity of the road is fenced and access is not restricted. The US Forest Service property to the west of State Highway 501 is used recreationally. The Laboratory property to the east of the road is surrounded by a tall, chain-link fence topped with barbed wire, is used industrially, and has restricted access.

10.3.2 Future/Proposed

It is not anticipated that the US Forest Service will change the recreational use of the Santa Fe National Forest in the near or distant future. The Laboratory does not anticipate any change from the industrial use of TA-16 for the operational life of the Laboratory (LANL 1995, 57224, pp.11–12)(Appendix D, Attachment 1).

10.4 No Further Action Proposal

10.4.1 Rationale

SWMU 16-025(g2) (structure number TA-16-108), a building located adjacent to and having a site description and operational history identical to that of SWMUs 16-025(e2, f2, h2) was previously removed by HWB from Module VIII of the Laboratory's Hazardous Waste Facility Permit. SWMU 16-025(g2) was removed from the permit under NFA Criterion 3. The December 23, 1998, permit modification removing this SWMU (NMED 1998, 63042, p. 28) is included as Attachment C of this request for permit modification.

The Laboratory ER Project is proposing SWMUs 16-025(e2, f2, h2) for NFA based on

- archival information indicating that contaminants were not released at these SWMUs;
- the obliteration of the surface footprints of these former buildings and the placement of several feet of excavated soil and/or base course and asphalt over their former locations during the construction of State Highway 501; and
- the precedent established by HWB in removing an identical SWMU [16-025(g2)] from Module VIII of the Laboratory's Hazardous Waste Facility Permit in December 1998.

10.4.2 Criterion

Based on the information presented in Sections 10.2 through 10.4, SWMUs 16-025(e2, f2, h2) are being proposed for NFA under Criterion 3.

10.5 Supporting Documentation Attached

Attachment A: LANL TA-16 structure history book. (LANL ER Records Package 730)

Attachment B: Martin and Hickmott interview of Hilton regarding S-Site history (Martin and Hickmott 1994, 52964.286)

Attachment C: NMED approval letter removing 99 SWMUs from LANL's Hazardous Waste Facility Permit. (NMED 1998, 63042)

Appendix D, Attachment 1: LANL site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

Appendix D, Attachment 2: LANL submittal letter for Revision 1 of Chapter 6 of the RFI work plan for OU 1082, Addendum 2. (LANL 1998, 59685)

10.6 References Used for Text of the Request for Permit Modification for SWMUs 16-025(e2, f2, h2)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory report LA-UR-95-1038, Los Alamos, New Mexico, pp. 6-1, 6-18, 6-19. (LANL 1996, 57225).

Environmental Restoration Project, September 1998. "Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1," Los Alamos National Laboratory, Los Alamos, New Mexico, pp. 6-14 and 6-15. (Environmental Restoration Project 1998, 59685).

10.7 History of Regulatory Deliverables

LANL, July 5, 1995: RFI work plan for OU 1082, Addendum 2, submitted to EPA, Region 6. (LANL 1995, 57225)

LANL, September 11, 1998: Submittal of ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, to DOE as partial satisfaction of Functional Area A.2 Performance Measure. (LANL 1998, 59685)

NMED, Winter, 1998/1999: NMED verbally requested that the ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, not be submitted for NMED review because it would be more efficient to make the Chapter 6 NFA proposals via a first-pass Class III permit modification request. (LANL 1998, 59685)(Appendix D, Attachment 2)

At the time that Addendum 2 of the RFI work plan for OU 1082 was submitted for review, NMED had not yet fully developed its five criteria for NFA. The work plan proposed NFA based on four criteria, rather than five, and on human health evaluations only. In 1998, the ER Project evaluated the NFA recommendations made in Addendum 2 of the work plan against ecological risk and other applicable regulations and standards. In conjunction with the DOE, the ER Project wrote a replacement Chapter 6 for this work plan that

- applied the NFA criteria more recently developed by NMED;
- reevaluated the NFA proposals to include an evaluation of ecological risk as well as other applicable regulations and standards; and
- removed NFA proposals that were no longer viable based on the above two bullets.

In the winter of 1998/1999, a verbal agreement was made between Mr. Dave McInroy of the ER Project and Mr. John Kieling of the NMED Hazardous Waste Bureau. Mr. Kieling requested that the text of Chapter 6 of Addendum 2 of the OU 1082 work plan not be significantly modified in 1998, but the revised NFA proposals be submitted in a first-pass Class III request for permit modification (LANL 1998, 59685)(Appendix D, Attachment 2). Therefore, the Laboratory ER Project is making the NFA proposal for SWMUs 16-025 (e2, f2, h2) in this request for permit modification.

10.7.1 References for Regulatory Deliverables

LANL, July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory report LA-UR-95-1038, Los Alamos, New Mexico, pp. 6-1, 6-18, 6-19. (LANL 1996, 57225)

Environmental Restoration Project, September 1998. "Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1," Los Alamos National Laboratory, Los Alamos, New Mexico. (Environmental Restoration Project 1998, 59685)

LANL, September 11, 1998. "Rewrite of Chapter 6 Within RFI Work Plan for OU 1082 to Satisfy PM for Functional Area A.2," Los Alamos National Laboratory letter to T. Taylor (DOE-LAAO) from J. Canepa (ER Project), Los Alamos, New Mexico. (LANL 1998, 59685)

11.0 SWMU 16-026(a2)
ACTIVE STORM OUTFALL AND ASSOCIATED DRAINLINE

11.1 Summary

SWMU 16-026(a2) is an active storm outfall and associated drainline from the roof drains of an administrative building at TA-16. From the time of its construction in the early 1950s, the building has housed offices only; no solid or hazardous wastes or constituents were ever managed in this building. This SWMU is being proposed for NFA under NFA Criterion 2 (the site has never been used for the management of solid or hazardous waste and/or constituents).

11.2 Description and Operational History

11.2.1 Site Description

The SWMU report (LANL 1990, 07512, p. 16-026)(Attachment A) describes SWMU 16-026(a2) as an inactive outfall with an unknown waste stream from a drain [line] located on the southeast side of Building TA-16-200 (Figure 11.2-1). However, archival information demonstrates that the outfall is periodically active, intermittently discharging rainwater collected from the roof of the building.

Building TA-16-200 is located outside of the fenced TA-16 HE-processing area (Figure 11.2-2). Rainwater from the roof of Building TA-16-200 is channeled through a line that runs beneath most of the length of the building's concrete basement floor, initiating as a 4-in.-diameter pipe at the north end of the basement (as-built Engineering Drawing ENG-C 8549 [sheet 96 of 144][Attachment B]). The 4-in. pipe connects to a 6-in. pipe at a juncture near the basement stairwell (as-built Engineering Drawing ENG-C 8549 [sheet 96 of 144][Attachment B]). The 6-in. line exits at the south end of the building where it runs southeast (underground) to a point of discharge (at daylight) approximately 175 ft southeast of the building (ENG-C 8541 [sheet 88 of 144][Attachment C]). The point of discharge is through a 12-in. corrugated culvert (see photograph [LANL 1994, 69720] included as Attachment D). No other buldings or potential sources of contamination are connected to this drainline/outfall.

11.2.2 Operational History

Building TA-16-200 was constructed from July 2, 1951, through December 22, 1952, and became operational in early 1953 (LANL ER Records Package 730)(Attachment E). This building has been used as an administrative office building from the time of its construction (As-built Engineering Drawings ENG-C 8549, 8550, 8551, and 8552)(Attachment B) and Martin/Hickmott interview of Lee Hilton (1994, 52464.286)(Attachment F).

As-built Engineering Drawing ENG-C 8541 (sheet 88 of 144)(Attachment C), shows that this drainline and associated outfall were built exclusively to collect and disperse storm water from the roof of TA-16-200. This is corroborated by Attachment B Engineering Drawings (ENG-C 8549 [sheet 96 of 144], ENG-C 8550 [sheet 97 of 144], ENG-C 8551 [sheet 98 of 144], and ENG-C 8552 [sheet 99 of 144]), which show that all roof drains tie into the building's storm drainline and that all floor drains tie into the building's sanitary sewer line.

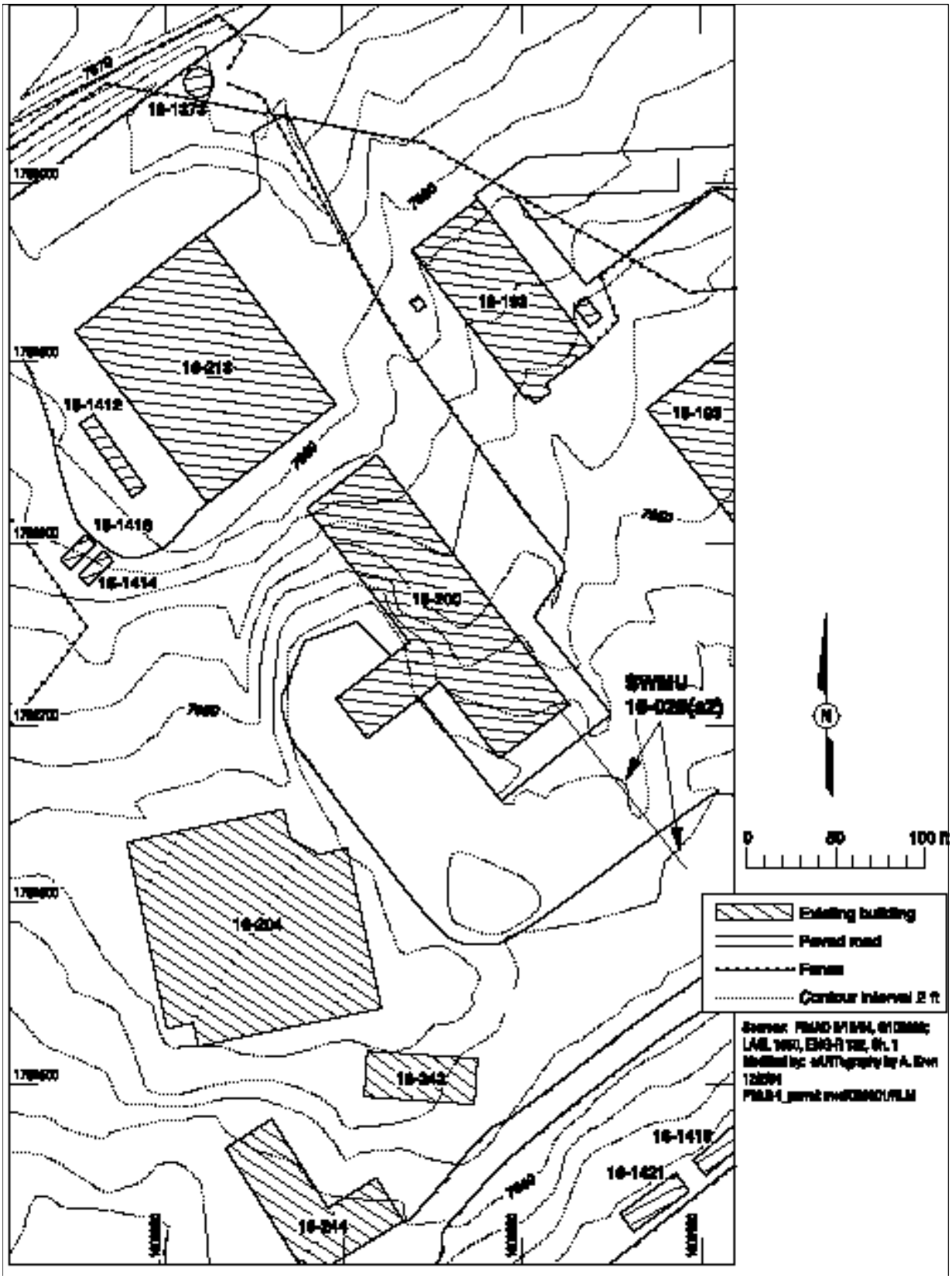

Figure 11.2-1. Location of SWMU 16-026(a2), active storm outfall and associated drainline

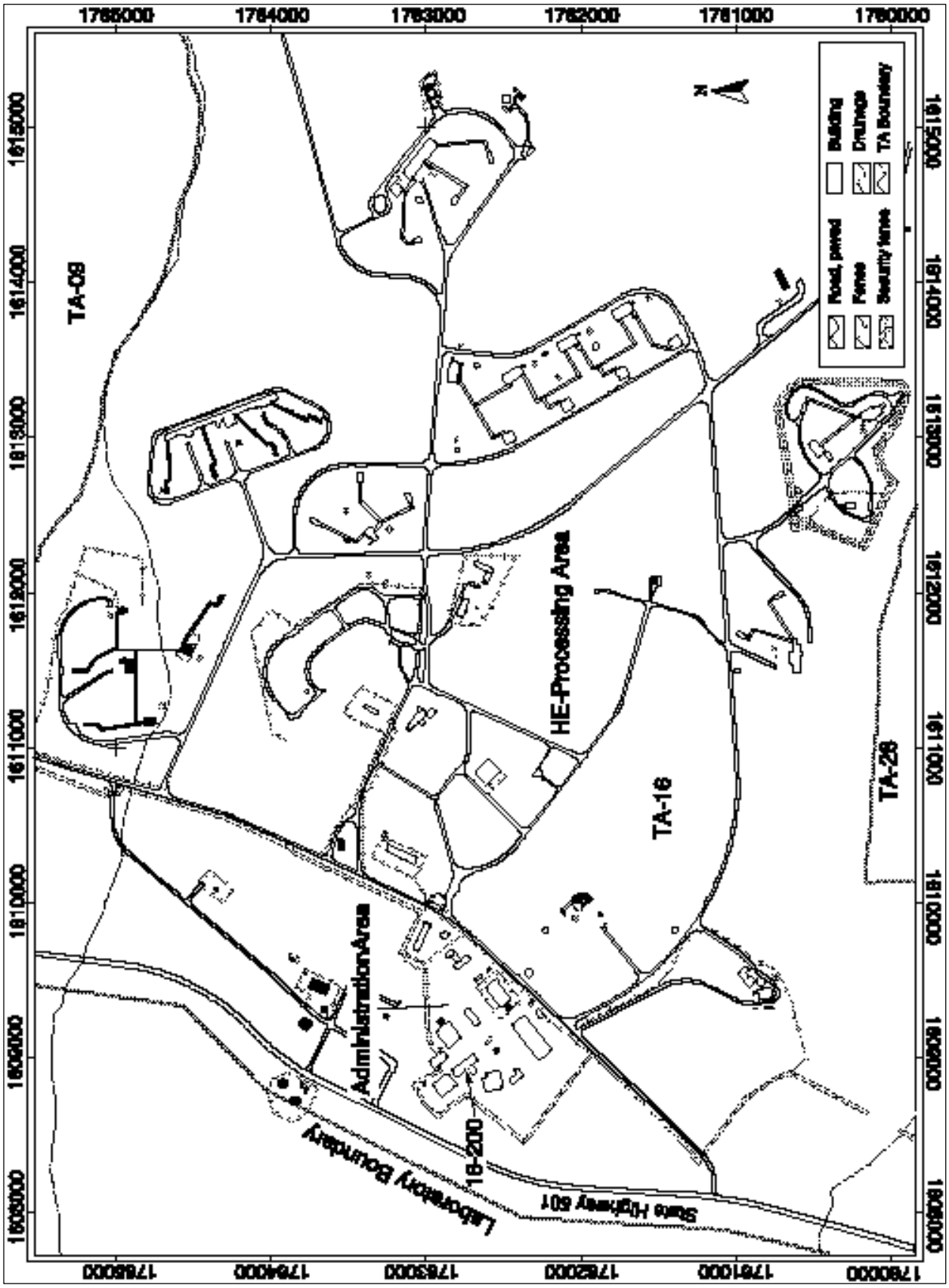

Figure 11.2-2. Location of Building 16-200

11.3 Land Use

11.3.1 Current

TA-16 is an industrial area used for the research, development, processing, and testing of HE. It is a high-security, restricted access area enclosed by a chain-link fence topped with barbed wire. Access to TA-16 is obtained only by passing through a security guard station. These security measures effectively eliminate the possibility of inadvertent site intrusion.

11.3.2 Future/Proposed

The Laboratory does not anticipate any change from the industrial restricted-access use of TA-16 for the operational life of the Laboratory (LANL 1995, 57224, pp.11-12)(Appendix D, Attachment 1). Future industrial use of this TA will continue to include the research, development, processing, and testing of HE.

11.4 No Further Action Proposal

11.4.1 Rationale

Based on archival information, the ER Project has demonstrated that, from the time Building TA-16-200 began operation in 1953 to the present,

- from the time of its construction to the present Building TA-16-200 has housed administrative offices only;
- none of the floor drains in Building TA-16-200 are tied into the SWMU 16-026(a2) storm drainline; all Building TA-16-200 floor drains are tied into the building's sanitary sewer system; and
- from the time of its construction to the present the SWMU 16-026(a2) drain system and associated outfall has received only the periodic flow of rainwater from 13 roof drains.

Thus, it is demonstrated that the SWMU 16-026(a2) outfall has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents.

11.4.2 Criterion

Based on the information presented in Sections 11.2 through 11.4.1, SWMS 16-026(a2) is proposed for NFA under NFA Criterion 2.

11.5 Supporting Documentation Attached

Attachment A: LANL SWMU report, Volume II, pp. 16-026. (LANL 1990, 07512)

Attachment B: LASL Engineering Drawings ENG-C 8549 (sheet 96 of 144), ENG-C 8550 (sheet 97 of 144), ENG-C 8551 (sheet 98 of 144), and ENG-C 8552 (sheet 99 of 144), dated 1951. (LASL 1951, 70003; 70004; 70005; 70006)

Attachment C: LASL Engineering Drawing ENG-C 8541 (sheet 88 of 144), dated 1951. (LASL 1951, 65632)

Attachment D: LANL photograph of SWMU 16-025(a2) outfall. (LANL 1994, 69720)

Attachment E: LANL TA-16 structure history book. (LANL ER Records Package 730)

Attachment F: Martin and Hickmott interview of Hilton regarding S-Site history. (Martin and Hickmott 1994, 52964.286)

Appendix D, Attachment 1: LANL, 1995. Site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

Appendix D, Attachment 2: LANL submittal letter for Revision 1 of Chapter 6 of the RFI work plan for OU 1082, Addendum 2. (LANL 1998, 59685)

11.6 References Used for Text of the Request for Permit Modification for SWMU 16-026(a2)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory Report LA-UR-95-1038, Los Alamos, New Mexico, p. 6-9. (LANL 1995, 57225)

Environmental Restoration Project, September 1998. “Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1,” Los Alamos National Laboratory, Los Alamos, New Mexico, p. 6-7. (Environmental Restoration Project 1998, 59685)

11.7 History of Regulatory Deliverables

LANL, July 5, 1995: RFI work plan for OU 1082, Addendum 2, submitted to EPA, Region 6. (LANL 1995, 57225)

LANL, September 11, 1998: Submittal of ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, to DOE as partial satisfaction of Functional Area A.2 Performance Measure. (LANL 1998, 59685)

NMED, Winter, 1998/1999: NMED verbally requested that the ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, not be submitted for NMED review because it would be more efficient to make the Chapter 6 NFA proposals via a first-pass Class III permit modification request. (LANL 1998, 59685)(Appendix D, Attachment 2)

At the time that Addendum 2 of the RFI work plan for OU 1082 was submitted for review, NMED had not yet fully developed its five criteria for NFA. The work plan proposed NFA based on four criteria, rather than five, and on human health evaluations only. In 1998, the ER Project evaluated the NFA recommendations made in Addendum 2 of the work plan against ecological risk and other applicable regulations and standards. In conjunction with the DOE, the ER Project wrote a replacement Chapter 6 for this work plan that

- applied the NFA criteria more recently developed by NMED;
- reevaluated the NFA proposals to include an evaluation of ecological risk as well as other applicable regulations and standards; and
- removed NFA proposals that were no longer viable based on the above two bullets.

In the winter of 1998/1999, a verbal agreement was made between Mr. Dave McInroy of the ER Project and Mr. John Kieling of the NMED Hazardous Waste Bureau. Mr. Kieling requested that the text of Chapter 6 of Addendum 2 of the OU 1082 work plan not be significantly modified in 1998, but the revised NFA proposals be submitted in a first-pass Class III request for permit modification (LANL 1998,

59685)(Appendix D, Attachment 2). Therefore, the Laboratory ER Project is making the NFA proposal for SWMU 16-026(a2) in this request for permit modification.

11.7.1 References for Regulatory Deliverables

LANL, July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory report LA-UR-95-1038, Los Alamos, New Mexico, pp. 6-1, 6-18, 6-19. (LANL 1996, 57225)

Environmental Restoration Project, September 1998. "Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1," Los Alamos National Laboratory, Los Alamos, New Mexico. (Environmental Restoration Project 1998, 59685)

LANL, September 11, 1998. "Rewrite of Chapter 6 Within RFI Work Plan for OU 1082 to Satisfy PM for Functional Area A.2," Los Alamos National Laboratory letter to T. Taylor (DOE-LAAO) from J. Canepa (ER Project), Los Alamos, New Mexico. (LANL 1998, 59685)

12.0 SWMUs 16-026(d2, e2, f2, g2, h, k, x) AND 16-030(b, e, f) OUTFALLS AND ASSOCIATED DRAINLINES

12.1 Summary

SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) are outfalls (and their associated drainlines) that serve floor drains in the utility rooms of various HE rest houses located throughout TA-16. Each of these outfalls was constructed to receive steam condensate from equipment used to heat the building associated with the outfall. Some drains are plugged (and thus, inactive) while others, although not plugged, are not used. The utility rooms of the rest houses are totally separated from the areas of the buildings used for storing HE components. No solid or hazardous waste or constituents were ever managed in the utility rooms of these buildings. These SWMUs are being proposed for NFA under NFA Criterion 2 (the site has never been used for the management of solid or hazardous waste and/or constituents).

12.2 Description and Operational History

12.2.1 Site Description

SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) are outfalls and their associated drainlines that serve single floor drains located in the utility rooms of various HE rest houses located throughout TA-16 (Figure 12.2-1).

A rest house is an auxiliary building used for the intermediate storage of HE materials which are awaiting some type of processing; hence, the term rest house. A typical rest house is approximately 20 ft by 40 ft and constructed of reinforced concrete with concrete floors. Metal double doors open to an exterior loading dock in front of the building. There are no windows. Open-lattice metal doors at the rear of the rest house connect it to an enclosed passageway that leads to one of TA-16's HE-processing buildings. Engineering Drawing ENG-C 15654 (sheet 51 of 121), dated 1951 (LASL 1951, 70007)(Attachment A) shows the floor plan and section of a typical rest house.

All rest houses at TA-16 are physically remote from other buildings and are often surrounded on three sides by an earthen berm. They are connected via enclosed passageways to an associated building used for the assembly, processing, or machining of HE. The passageways are up to several hundred feet in length.

Each rest house contains a separate 4-ft- by 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the building. As indicated in ENG C-15654 (sheet 51 of 121), there is no access to the utility room from the area used for storing HE components. Each utility room can be accessed only from outside of the structure. (A photograph of the outside entrance to a typical utility room is included as Attachment B [LANL 2000, 67384]). Each utility room has a single floor drain which discharges through a 4-in. vitrified clay pipe to an outfall located 20 ft to 90 ft from its associated rest house. Because the following outfalls are buried, it was not possible to determine their exact locations through field observations: SWMUs 16-026(d2, h, k) and 16-030(b, e, f).

Photographs of two typical rest house utility rooms and their outfalls (from this set of SWMUs) are included as Attachment C (Environmental Restoration Project 2000, 67385; 67386).

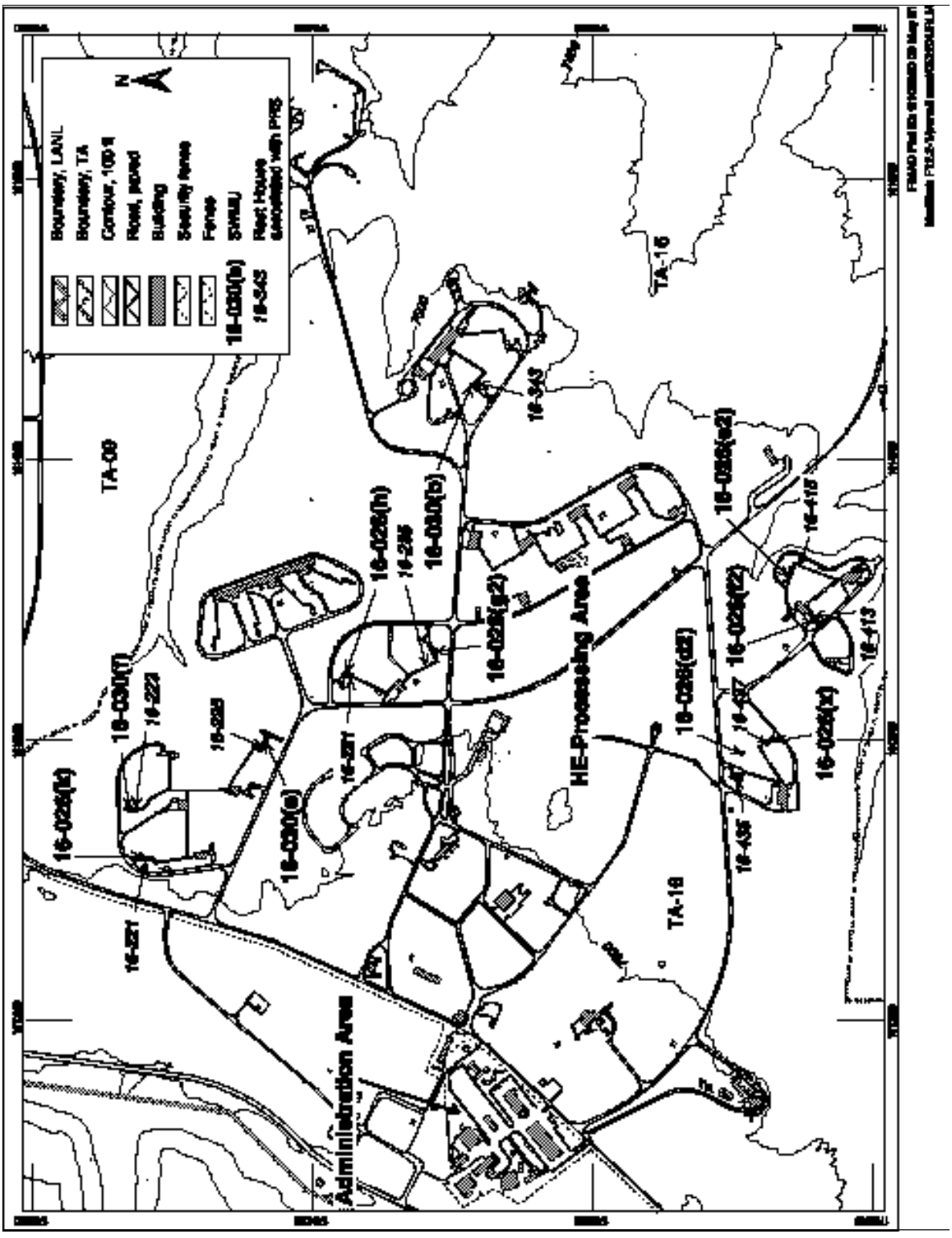

Figure 12.2-1. SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) and associated rest houses

12.2.2 Operational History

From the early 1950s to the present, each building in the TA-16 complex has been heated by steam, which is pumped from building to building. Each rest house has a utility room equipped with a steam pump as well as a small compressor used for heating and ventilating the associated building. A floor drain in each utility room carried low volumes of steam condensate to an outfall. The current practice at TA-16 is to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. This practice was initiated in 1992. Between 1992–1997, many of the utility room drains were plugged from within the building. However, some drains were subsequently unplugged as a safety precaution to prevent accumulated moisture from shorting-out electrical equipment. The floors of all ten utility rooms show rust and mineral stains as typically result from the evaporation of condensed water.

From approximately 1984 until January 1997 (when the new TA-16 steam plant became operative), TA-16 steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. Amine was added to the steam once the steam exited the steam plant. The amine was injected into the steam pipe in liquid form and immediately vaporized as it came into contact with the steam. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the buildings at TA-16. No Laboratory or JCI employees knowledgeable of pre-1984 TA-16 steam plant practices could be located for corroborative interviews. However, the gas and steam engineer for the Laboratory's Utilities and Infrastructures Group and a water treatment specialist employed by JCI both stated that, because water treatment technologies have changed very little over the past 50 years, there is no reason to believe that the Laboratory's pre-1984 practice for treating steam varied from the practice used post-1984. (Nonno 2000, 67381, pp. 5, 6) (Attachment D)

From the normal operation and maintenance of the compressors, small amounts of lubricating oil have been known to leak, and oil stains are visible on many of the utility room floors. Typically, the oil staining is confined to a narrow ring (2–5 in. wide) around the compressor. Subsequently, some compressors have been contained by flexible absorbent tubing (referred to as a "pig"). The total capacity of lubricating oil (20-weight) for each compressor is approximately .5 quart or less (Attachment D, p. 3). An employee who routinely inspected the utility rooms and has worked at TA-16 from 1981 verified that, from the time of his hire, there has been no release to the environment involving a utility room drain from a rest house (Attachment D, p. 2).

The mechanical heating and ventilating equipment (condensate pump and compressor) has been removed from the utility room of rest house TA-16-415 [associated with SWMU 16-026(e2)] and replaced by an electric heating and ventilating unit (see photographs included as Attachment E [LANL 2000, 67387]). The utility room floor drain of this rest house is plugged and no longer used. Although the mechanical equipment has not been removed from the utility rooms of rest houses TA-16-221, -223, -225, and -343 [associated with SWMUs 16-026(k), 16-030(f), 16-030(e), and 16-030(b), respectively], these buildings are no longer used and steam is no longer pumped to them. These rest houses (TA-16-221, -223, -225, and -343) are slated for D&D.

Table 12.2-1 provides the structure number associated with SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) and the status for each of the utility room floor drains associated with them.

Table 12.2-1
Status of Utility Room Drains in TA-16 Resthouses

SWMU Number	Structure Number of Associated Rest House	Drain Status	Date Plugged	Date Reopened
16-026(d2)	TA-16-435	Open	10/1/92	3/28/97
16-026(e2)	TA-16-415	Plugged	10/1/92	n/a*
16-026(f2)	TA-16-413	Open	10/1/92	8/14/97
16-026(g2)	TA-16-285	Plugged	10/1/92	n/a
16-026(h)	TA-16-281	Plugged	10/1/92	n/a
16-026(k)	TA-16-221	Open	n/a	n/a
16-026(x)	TA-16-437	Open	12/8/95	4/16/97
16-030(b)	TA-16-343	Plugged	7/20/93	n/a
16-030(e)	TA-16-225	Plugged	7/20/93	n/a
16-030(f)	TA-16-223	Open	n/a	n/a

* n/a=not applicable.

12.3 Land Use

12.3.1 Current

TA-16 is an industrial area used for the research, development, processing, and testing of HE. It is a high-security, restricted access area enclosed by a chain-link fence topped with barbed wire. Access to TA-16 is obtained only by passing through a security guard station. Within this outer fence, certain HE-processing areas within TA-16 are enclosed by a second fence. Access through this interior fence is obtained only by passing through a gate secured by a badge-reader. These security measures effectively eliminate the possibility of inadvertent site intrusion.

SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) are all located within the double-fenced HE-processing area (Figure 12.2-1).

12.3.2 Future/Proposed

The Laboratory does not anticipate any change from the industrial restricted-access use of TA-16 for the operational life of the Laboratory (LANL 1995, 57224, pp.11–12)(Appendix D, Attachment 1). Future industrial use of this TA will continue to include the research, development, processing, and testing of HE.

12.4 No Further Action Proposal

12.4.1 Rationale

Each of the SWMU 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) outfalls receives only steam condensate flow from the single floor drain located in the utility room of its respective rest house. The steam condensate is currently composed of water only and was formerly composed of water containing amine, a commonly used additive for controlling pH and preventing corrosion and mineral buildup within piping. Amine does not fit the definition of RCRA hazardous wastes and/or constituents as provided in 40 CFR 261.3.

Although areas of oil staining are visible on many of the utility room floors, the stains are small, indicating that only small amounts of oil, resulting from the operation and maintenance of the compressors, have leaked. This amount of staining is common to utility rooms in commercial buildings. In 40 CFR 261.3 (a)(2)(iv)(D), EPA set a precedent for excluding *de minimus* leaks (from devices used to transfer materials) from being considered as a solid and/or hazardous waste.

Based on site visits and archival information, the ER Project has demonstrated that

- the additive in the condensate associated with these SMWUs does not fit the definition of RCRA hazardous wastes and/or constituents; and
- *de minimus* loss of oil from the compressors associated with these SMWUs also does not fit the definition of RCRA hazardous wastes and/or constituents.

Thus, none of the SWMU 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) outfalls have ever been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents.

Because it has been demonstrated that SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) never managed RCRA solid or hazardous wastes and/or constituents, finding the exact location of the outfalls is not essential in determining their eligibility for NFA.

12.4.2 Criterion

Based on the information presented in Sections 12.2 through 12.4.1, SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) are proposed for NFA under NFA Criterion 2.

12.5 Supporting Documentation Attached

Attachment A: LASL Engineering Drawing ENG-C 15654 (sheet 51 of 121). (LASL 1951, 70007)

Attachment B: LANL photograph of entrance to rest house TA-16-435 utility room. (LANL 2000, 67384)

Attachment C: LANL photographs of rest houses TA-16-413 and TA-16-437 utility rooms and their outfalls. (LANL 2000, 67385; 67386)

Attachment D: Nonno personal and telephone interviews regarding HE rest houses. (Nonno 2000, 67381)

Attachment E: LANL photographs of rest house TA-16-415 utility room. (LANL 2000, 67387)

Appendix D, Attachment 1: LANL site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

Appendix D, Attachment 2: LANL submittal letter for Revision 1 of Chapter 6 of the RFI work plan for OU 1082, Addendum 2. (LANL 1998, 59685)

12.6 References Used for Text of the Request for Permit Modification for SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1082," Los Alamos National Laboratory Report LA-UR-93-1196, Los Alamos, New Mexico, pp.6-19 and 6-20. (LANL 1993, 20948)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory Report LA-UR-95-1038, Los Alamos, New Mexico, pp.6-13 and 6-14. (LANL 1995, 57225)

Environmental Restoration Project, September 1998. “Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1,” Los Alamos National Laboratory, Los Alamos, New Mexico, pp.6-10 and 6-11. (Environmental Restoration Project 1998, 59685)

12.7 History of Regulatory Deliverables

LANL, July 5, 1995: RFI work plan for OU 1082, Addendum 2, submitted to EPA, Region 6. (LANL 1995, 57225)

LANL, September 11, 1998: Submittal of ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, to DOE as partial satisfaction of Functional Area A.2 Performance Measure. (LANL 1998, 59685)

NMED, Winter, 1998/1999: NMED verbally requested that the ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, not be submitted for NMED review because it would be more efficient to make the Chapter 6 NFA proposals via a first-pass Class III permit modification request. (LANL 1998, 59685)(Appendix D, Attachment 2)

At the time that Addendum 2 of the RFI work plan for OU 1082 was submitted for review, NMED had not yet fully developed its five criteria for NFA. The work plan proposed NFA based on four criteria, rather than five, and on human health evaluations only. In 1998, the ER Project evaluated the NFA recommendations made in Addendum 2 of the work plan against ecological risk and other applicable regulations and standards. In conjunction with the DOE, the ER Project wrote a replacement Chapter 6 for this work plan that

- applied the NFA criteria more recently developed by NMED;
- reevaluated the NFA proposals to include an evaluation of ecological risk as well as other applicable regulations and standards; and
- removed NFA proposals that were no longer viable based on the above two bullets.

In the winter of 1998/1999, a verbal agreement was made between Mr. Dave McInroy of the ER Project and Mr. John Kieling of the NMED Hazardous Waste Bureau. Mr. Kieling requested that the text of Chapter 6 of Addendum 2 of the OU 1082 work plan not be significantly modified in 1998, but the revised NFA proposals be submitted in a first-pass Class III request for permit modification (LANL 1998, 59685)(Appendix D, Attachment 2). Therefore, the Laboratory ER Project is making the NFA proposal for SWMUs 16-026(d2, e2, f2, g2, h, k, x) and 16-030(b, e, f) in this request for permit modification.

12.7.1 References for Regulatory Deliverables

LANL, July 1995. “RFI Work Plan for Operable Unit 1082, Addendum 2,” Los Alamos National Laboratory report LA-UR-95-1038, Los Alamos, New Mexico. (LANL 1996, 57225)

Environmental Restoration Project, September 1998. “Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1,” Los Alamos National Laboratory, Los Alamos, New Mexico. (Environmental Restoration Project 1998, 59685)

LANL, September 11, 1998. “Rewrite of Chapter 6 Within RFI Work Plan for OU 1082 to Satisfy PM for Functional Area A.2,” Los Alamos National Laboratory letter to T. Taylor (DOE-LAAO) from J. Canepa (ER Project), Los Alamos, New Mexico. (LANL 1998, 59685)

13.0 SWMU 16-026(t)
ACTIVE OUTFALL AND ASSOCIATED DRAINLINE

13.1 Summary

SWMU 16-026(t) is an active storm outfall and associated drainline from the roof drains of Building TA-16-207, which was used as a warehouse until 1993, when it was converted to a weapons test facility (noninvasive and nondestructive). No solid or hazardous wastes or constituents were ever managed at this outfall/drainline. This SWMU is being proposed for NFA under NFA Criterion 2 (the site has never been used for the management of solid or hazardous waste and/or constituents).

13.2 Description and Operational History

13.2.1 Site Description

The SWMU report (LANL 1990, 07512, p. 16-026)(Attachment A) describes SWMU 16-026(t) as an inactive outfall from a drain [line] located on the eastern side of Building TA-16-207 (Figure 13.2-1). The SWMU report further indicates that uranium contamination may be associated with this outfall. However, archival information demonstrates that the SWMU 16-026(t) storm drainline periodically collects rainwater only from the building roof. Rainwater from 10 roof drains is channeled from the roof to a line that runs through the interior of the building and connects to a drainline beneath the concrete floor of Building TA-16-207 [as-built Engineering Drawing ENG-C 7162 (sheet 60 of 80)(Attachment B)]. The drainline exits the building at the northwest and the northeast corners of the building as 6-in. pipes that connect to an 8-in. storm drainline running southeast (underground) to its point of discharge (at daylight) approximately 80 ft southeast of the building (ENG-C 7158 [sheet 56 of 80][Attachment C]; LANL 1994, 69721 [Attachment D]). The point of discharge is through an 8-in. vitrified clay pipe.

Within the building, the drainline is an entirely closed system suspended from the ceiling. Building TA-16-207 and the SWMU 16-026(t) outfall/drainline system are located outside of TA-16's double-fenced HE-processing area (Figure 13.2-2). No other buildings or potential sources of contaminants are connected to this drainline/outfall.

13.2.2 Operational History

Building TA-16-207 was constructed from November 5, 1951, through November 10, 1952, and became operational in early 1953 (LANL ER Records Package 730)(Attachment E). Building TA-16-207 functioned exclusively as a warehouse from the time of its construction in 1951 (ENG-C 7158 [sheet 56 of 80][Attachment C]) until 1992. During that period, the building stored a variety of items, including small amounts of depleted uranium (stored in a locked, controlled area of the building) (Paige 1994, 52964.605)(Attachment F), which is not a RCRA-regulated hazardous waste.

As-built Engineering Drawing ENG-C 7158 (sheet 56 of 80)(Attachment C) shows that this drain was constructed exclusively to receive rainwater. This is corroborated by the Attachment B Engineering Drawing ENG-C 7162 (sheet 60 of 80), which shows that, at the time of construction, all roof drains tied into the building's storm drainline and all floor drains tied into the building's sanitary sewer line.

An exhaustive search of Laboratory engineering drawings revealed that no changes were made to Building TA-16-207 until late 1991/early 1992 (Nonno 2000, 67382)(Attachment G), when the building was converted to office and laboratory space for the Environmental Testing Team of the Engineering Sciences and Applications Division Measurement Technology Group (ESA-MT, ET). ESA-MT, ET still occupies the building. As part of this conversion, a metal-clad addition was added to the northeast side of the building. Engineering Drawing ENG-C 46139 (sheet 3 of 44)(Attachment H) is the [civil] site plan that

was made in preparation for this addition. ENG-C 46139 shows that the sanitary sewer and storm drain connections in place in 1991 are the same as those indicated in the 1951 as-built engineering drawings. A recent site visit confirmed that the storm drainline from the building roof drains daylights (Attachment D), as indicated in both the 1951 and 1991 engineering drawings.

From 1992 to the present, Building TA-16-207 has been occupied by ESA-MT, ET. The ESA-MT, ET conducts mechanical test simulations (i.e., noninvasive and nondestructive) on weapons components. Testing includes static testing, such as static loads, pressure, and material characterization tests. (Nonno 2000, 67383)(Attachment I)

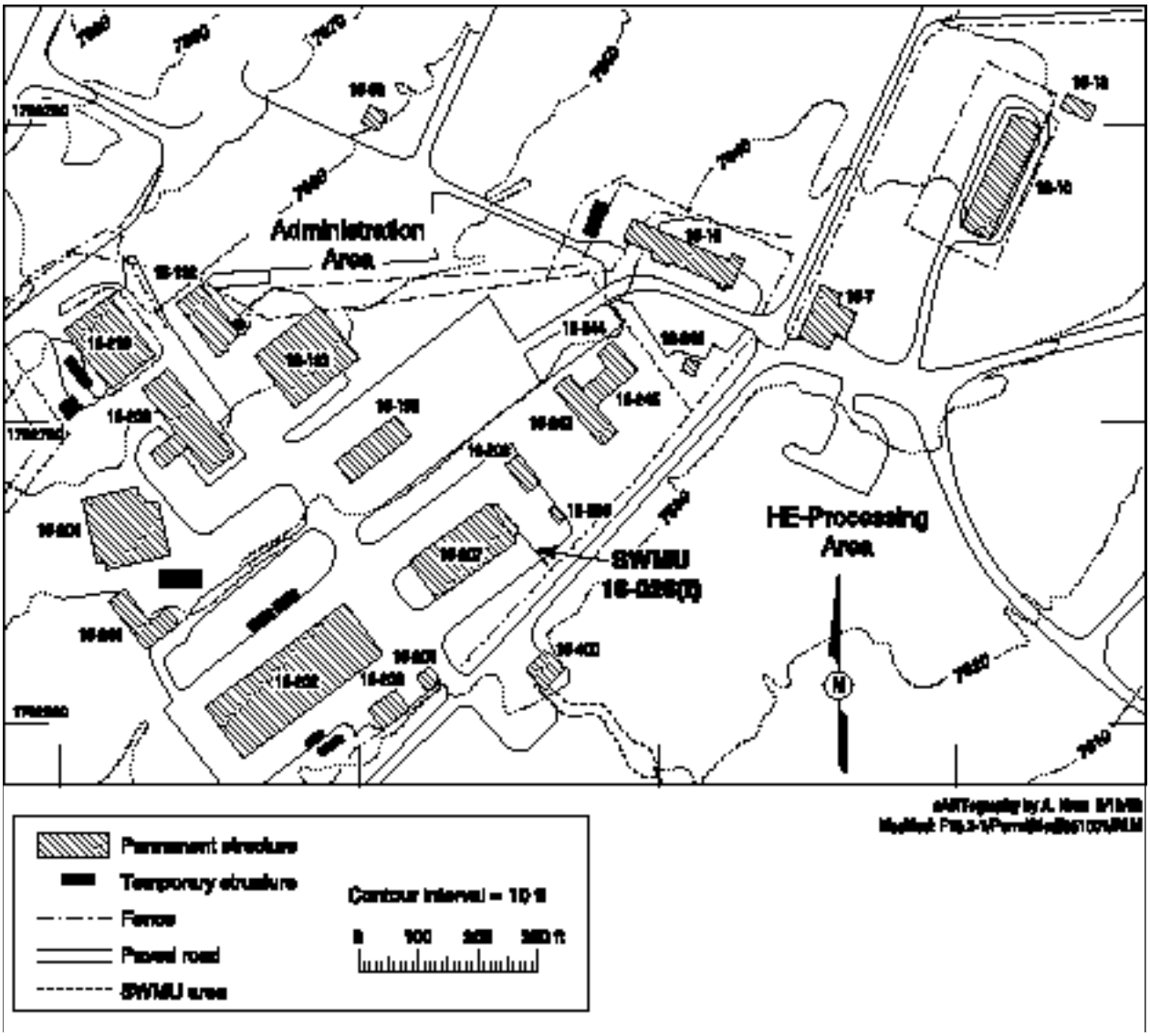

Figure 13.2-1. Location of SWMU 16-026(t)

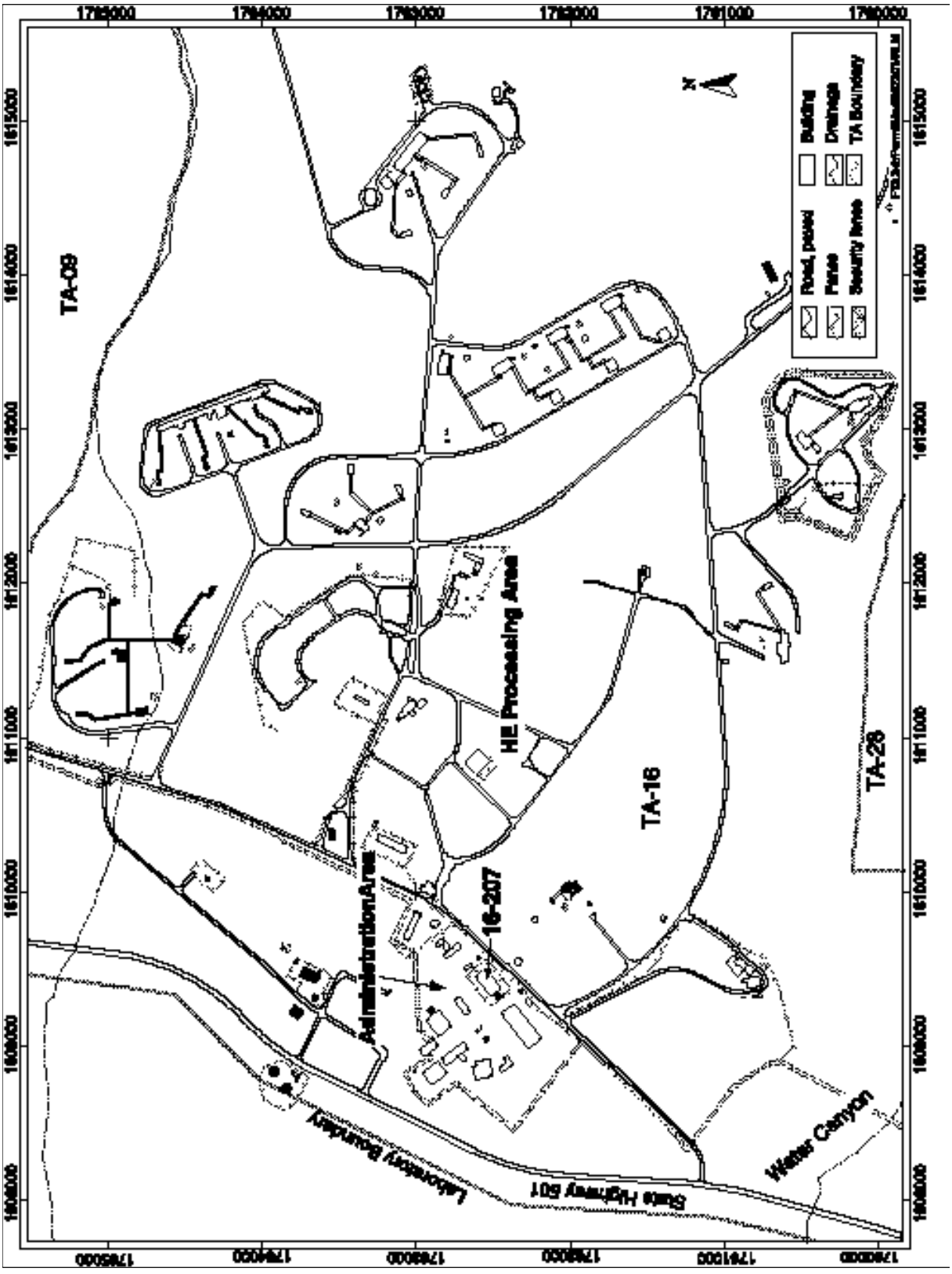

Figure 13.2-2. Location of Building 16-207

13.3 Land Use

13.3.1 Current

TA-16 is an industrial area used for the research, development, processing, and testing of HE. It is a high-security, restricted-access area enclosed by a chain-link fence topped with barbed wire. Access to TA-16 is obtained only by passing through a security guard station. Within this outer fence, certain HE-processing areas within TA-16 are enclosed by a second fence. Access through this interior fence is obtained only by passing through a gate secured by a badge-reader. These security measures effectively eliminate the possibility of inadvertent site intrusion.

SWMU 16-026(t) is located outside of the double-fenced HE-processing area.

13.3.2 Future/Proposed

The Laboratory does not anticipate any change from the industrial restricted-access use of TA-16 for the operational life of the Laboratory (LANL 1995, 57224, pp.11-12)(Appendix D, Attachment 1). Future industrial use of this TA will continue to include the research, development, processing, and testing of HE.

13.4 No Further Action Proposal

13.4.1 Rationale

Based on archival information and site visits, the ER Project has demonstrated that

- from 1951 (the time of construction of Building TA-16-207) to the present, the SWMU 16-026(t) storm drain system and associated outfall has managed only the periodic flow of rainwater from the roof drains of Building TA-16-207;
- within the interior of Building TA-16-207, the SWMU 16-026(t) storm drain system is an entirely closed system that receives no other source of influent; and
- all other drains in Building TA-16-207 are tied into the building's sanitary sewer system.

Thus, it is demonstrated that the SWMU 16-026(t) outfall has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents.

13.4.2 Criterion

Based on the information presented in Sections 13.2 through 13.4.1, SWMU 16-026(t) is proposed for NFA under NFA Criterion 2.

13.5 Supporting Documentation Attached

Attachment A: LANL SWMU report, Volume II, pp. 16-026. (LANL 1990, 07512)

Attachment B: LASL Engineering Drawing ENG-C 7162 (sheet 60 of 80), dated 1951. (LASL 1951, 70008)

Attachment C: LASL Engineering Drawing ENG-C 7158 (sheet 56 of 80), dated 1951. (LASL 1951, 24052)

Attachment D: LANL photograph of TA-16-207 outfall. (LANL 1994, 69721)

Attachment E: LANL TA-16 structure history book. (LANL [no date], LANL ER Records Package 730)

Attachment F: Paige memorandum to file, regarding use of Building TA-16-207. (Paige 1994, 52964.605)

Attachment G: Nonno memorandum to file, regarding site visit to Building TA-16-207. (Nonno 2000, 67382)

Attachment H: LANL Engineering Drawing ENG-C46139 (sheet 3 of 44), dated 1991. (LASL 1991, 70027)

Attachment I: (Nonno memorandum to file, regarding current operations in Building TA-16-207. (Nonno 2000, 67383)

Appendix D, Attachment 1: LANL, 1995. Site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

Appendix D, Attachment 2: LANL submittal letter for Revision 1 of Chapter 6 of the RFI work plan for OU 1082, Addendum 2. (LANL 1998, 59685)

13.6 References Used for Text of the Request for Permit Modification for SWMU 16-026(t)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory Report LA-UR-95-1038, Los Alamos, New Mexico, p. 6-9. (LANL 1995, 57225)

Environmental Restoration Project, September 1998. “Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1,” Los Alamos National Laboratory, Los Alamos, New Mexico, p. 6-7. (Environmental Restoration Project 1998, 59685)

13.7 History of Regulatory Deliverables

LANL, July 5, 1995: RFI work plan for OU 1082, Addendum 2, submitted to EPA, Region 6. (LANL 1995, 57225)

LANL, September 11, 1998: Submittal of ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, to DOE as partial satisfaction of Functional Area A.2 Performance Measure. (LANL 1998, 59685)

NMED, Winter, 1998/1999: NMED verbally requested that the ecological and ARARs revision of Chapter 6 of the RFI work plan for OU 1082, Addendum 2, not be submitted for NMED review because it would be more efficient to make the Chapter 6 NFA proposals via a first-pass Class III permit modification request. (LANL 1998, 59685)(Appendix D, Attachment 2)

At the time that Addendum 2 of the RFI work plan for OU 1082 was submitted for review, NMED had not yet fully developed its five criteria for NFA. The work plan proposed NFA based on four criteria, rather than five, and on human health evaluations only. In 1998, the ER Project evaluated the NFA recommendations made in Addendum 2 of the work plan against ecological risk and other applicable regulations and standards. In conjunction with the DOE, the ER Project wrote a replacement Chapter 6 for this work plan that

- applied the NFA criteria more recently developed by NMED;
- reevaluated the NFA proposals to include an evaluation of ecological risk as well as other applicable regulations and standards; and
- removed NFA proposals that were no longer viable based on the above two bullets.

In the winter of 1998/1999, a verbal agreement was made between Mr. Dave McInroy of the ER Project and Mr. John Kieling of the NMED Hazardous Waste Bureau. Mr. Kieling requested that the text of Chapter 6 of Addendum 2 of the OU 1082 work plan not be significantly modified in 1998, but the revised NFA proposals be submitted in a first-pass Class III request for permit modification (LANL 1998, 59685)(Appendix D, Attachment 2). Therefore, the Laboratory ER Project is making the NFA proposal for SWMU 16-026(t) in this request for permit modification.

13.7.1 References for Regulatory Deliverables

LANL, July 1995. "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory report LA-UR-95-1038, Los Alamos, New Mexico, pp. 6-1, 6-18, 6-19. (LANL 1996, 57225)

Environmental Restoration Project, September 1998. "Chapter 6 of RFI Work Plan for OU 1082, Addendum 2, Rev. 1," Los Alamos National Laboratory, Los Alamos, New Mexico. (Environmental Restoration Project 1998, 59685)

LANL, September 11, 1998. "Rewrite of Chapter 6 Within RFI Work Plan for OU 1082 to Satisfy PM for Functional Area A.2," Los Alamos National Laboratory letter to T. Taylor (DOE-LAAO) from J. Canepa (ER Project), Los Alamos, New Mexico. (LANL 1998, 59685)

14.0 SWMU 20-003(a)
FORMER FIRING SITE CONTROL BUILDING

14.1 Summary

SWMU 20-003(a) consists of a former control building (TA-20-2) that supported test-firing operations conducted at a technical area that no longer exists. The control building was used solely for controlling the detonation of and observing firing tests. The building was removed in 1948 when TA-20 was decontaminated and decommissioned to make way for a new access road. No hazardous wastes or constituents were ever managed in this building. SWMU 20-003(a) is being proposed for NFA under NFA Criterion 2 (the site has never been used for the management of solid or hazardous waste and/or constituents).

14.2 Description and Operational History

14.2.1 Site Description

SWMU 20-003(a) was located near the center of TA-20 (Figure 14.2-1), a now decommissioned Laboratory technical area. LASL Engineering Drawing ENG-C 1775, dated 1945, (LASL 1945, 24342)(Attachment A) shows structure TA-20-2 as a one-room, 20- by 10- by 7.5-ft building with three wooden walls and a large access door. This drawing also shows that the building was covered and surrounded on three sides by an earthen berm. Shelves were placed near the door and a workbench was located at the end of the building opposite the door. The plumbing plan for TA-20-2, LASL Engineering Drawing ENG-C 1779 (sheet 1 of 1), dated 1945 (LASL 1945, 24346)(Attachment B), shows that Building TA-20-2 had a steel door and contained no plumbing.

LASL Engineering Drawing ENG-C 1778 (LASL 1945, 24345) (Attachment C) shows the general layout of TA-20 and shows the location of Building TA-20-2 within the TA.

14.2.2 Operational History

TA-20 consisted of a series of firing areas that were spaced along a small road heading west from New Mexico State Highway 4 (Figure 14.2-1; Attachment C). The area was used during the Manhattan Project to test initiators (devices used to generate neutrons to initiate nuclear explosions). In late 1945, initiator work was transferred to a new site, TA-33. At this time, Group M-4 took over TA-20 to conduct implosion tests. Group M-4 performed fewer than 10 tests. (LANL 1994, 34756, p. 2-1 through 2-4)

TA-20 underwent an intensive radiation-monitoring and cleanup effort in the spring of 1946 during which soil contaminated with polonium was removed. Several structures were also removed at that time. In April 1948, TA-20 was decontaminated and decommissioned to make way for East Jemez Road to provide access to South Mesa and Los Alamos. Many of the remaining structures were dismantled and removed (including TA-20-2). A two-week cleanup conducted during the summer of 1948 collected 60–70 pounds of HE just before construction of East Jemez Road was to begin. The Laboratory continued to conduct periodic searches for HE until the area was declared safe in 1973. (LANL 1994, 34756, p. 2-4)

TA-20 was decommissioned as a designated technical area in 1948. The area formerly occupied by TA-20 is located along what is currently the south side of East Jemez Road approximately 0.5 mi west of the DOE small-arms firing range. This area is near the western end of Sandia Canyon within the boundaries of what are now TAs-53 and -72.

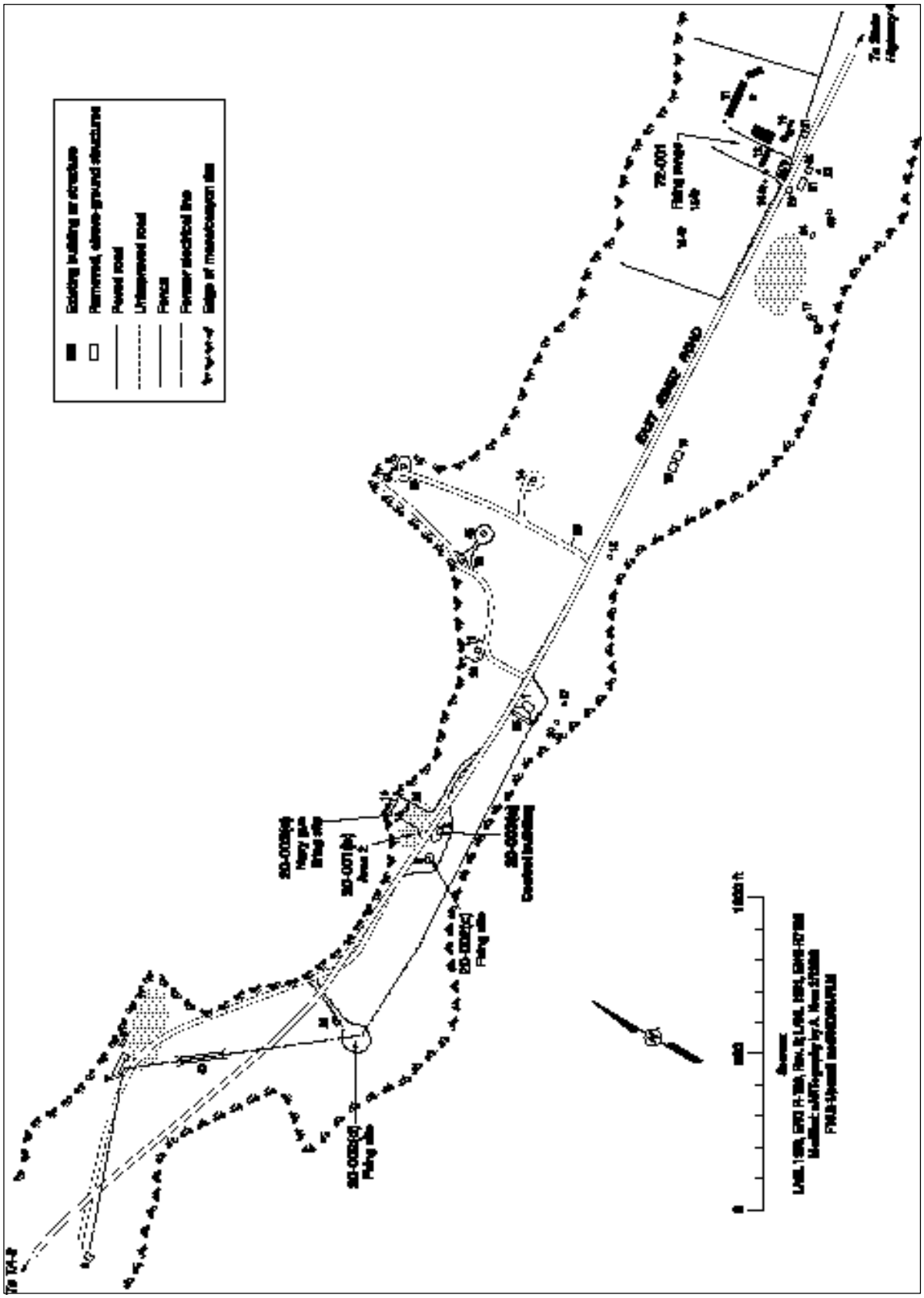

Figure 14.2-1 Locations of structures, SWMUs, and areas of concern in former TA-20 and in TA-72

Building TA-20-2, SWMU 20-003(a), was constructed in March of 1945 as a control building (LANL ER Records Package 751) (Attachment D) to support firing operations at a former test firing site [PRS 20-002(c)] and a former navy gun test firing site [PRS 20-003(c)]. A control building is used solely to remotely detonate test firings and to shelter personnel observing the tests. No hazardous wastes or contaminants were ever managed in this building. A 1947 Laboratory memo (Bradbury 1947, 07006) (Attachment E) states that the initial installation at TA-20 consisted of a laboratory and a control building adjacent to a firing site.

Building TA-20-2 was used for a brief period of time, approximately nine months to three years. Although Group M-4 (the implosions test group) used TA-20 to conduct implosion tests, it is unknown whether that group ever used Building TA-20-2 for remote detonation and observation of their implosion tests or if use of the building ended when the initiator test group moved to TA-33. Whichever the case, Building TA-20-2 was removed in April of 1948 (Attachment D) when TA-20 was decommissioned in preparation for the construction of East Jemez Road.

14.3 Land Use

14.3.1 Current

The former location of TA-20 lies within the current boundaries of TA-53 and TA-72, an industrial area containing the Los Alamos Meson Physics Facility (LAMPF). The LAMPF facility consists of a 0.5 mi.-long linear proton accelerator and associated research areas, offices, laboratories, and operational facilities. The facility also includes administrative buildings, a cafeteria, a library, workshops, and warehouses. East Jemez Road runs through the center of the former TA. Land use is industrial. The area along both sides of East Jemez Road is bounded by a 4-ft-high barbed wire fence posted with frequent “No Trespassing” signs.

14.3.2 Future/Proposed

The Laboratory does not anticipate any change from industrial use (and the posted fencing bounding the land) in the vicinity of former TA-20 for the operational life of the Laboratory (LANL 1995, 57224, pp. 11–12) (Appendix D, Attachment 1).

14.4 No Further Action Proposal

14.4.1 Rationale

Archival information demonstrates that

- SWMU 20-003(a) (Building TA-20-2) was used solely as a control building for a former test firing site [PRS 20-002(c)] and a former navy gun test firing site [PRS 20-003(c)] for a duration of nine months to three years. The control building was used solely to remotely detonate test firings and to shelter personnel observing the tests.
- no hazardous wastes and/or constituents were ever managed at this building.

14.4.2 Criterion

Based on the information presented in Sections 14.2 through 14.4.1, SWMU 20-003(a) is proposed for NFA under Criterion 2.

14.5 Supporting Documentation Attached

Attachment A: LASL Engineering Drawing ENG-C 1775, dated 1945. (LASL 1945, 24342)

Attachment B: LASL Engineering Drawing ENG-C 1779 (sheet 1 of 1), dated 1945. (LASL 1945, 24346)

Attachment C: LASL Engineering Drawing ENG-C 1778. (LASL 1945, 24345)

Attachment D: LANL TA-20 structure history book. (LANL ER Records Package, 751)

Attachment E: 1947 Laboratory memo. (Bradbury 1947, 07006)

Appendix D, Attachment 1: LANL 1995. Site development plan, annual update 1995, pp. 11–12. (LANL 1995, 57224)

14.6 Reference Used for Text of the Request for Permit Modification for SWMU 20-003(a)

LANL, May 1994: Work Plan for Operable Unit 1100 (LANL 1994, 34756, pp. 2-1 through 2-4 and 6-1 and 6-2)

14.7 History of Regulatory Deliverables

LANL, May 25, 1994: Work Plan for OU 1100 submitted to EPA Region 6. (LANL 1994, 34756)

EPA, November 10, 1994: NOD for work plan for OU 1100 (EPA 1994, 52910.118). SWMU 20-003(a) did not receive an NOD.

LANL, December 14, 1994: Response to NOD for work plan for OU 1100. (LANL 1994, 43899)

EPA, December 28, 1994: Approval for work plan for OU 1100. (EPA 1994, 52910.117).

14.7.1 References for Regulatory Deliverables

LANL (Los Alamos National Laboratory), May 1994. “RFI Work Plan for Operable Unit 1100,” Los Alamos National Laboratory report LA-UR-94-1097, Los Alamos, New Mexico. (LANL 1994, 34756)

EPA (US Environmental Protection Agency), November 10, 1994. EPA review and notice of deficiency, RFI work plan OU 1100, EPA letter to J. Vozella (Assistant Area Manager, Environment, Safety, and Health Branch, DOE/LAAO) from W. Honker, P.E., Chief, RCRA Permits Branch, EPA Region 6, Dallas, Texas. (EPA 1994, 52910.118)

LANL (Los Alamos National Laboratory), December 14, 1994. “Response to Notice of Deficiency (NOD) Concerning Operable Unit 1100 Resource Conservation and Recovery Act Facility Investigation (RFI) Work Plan, Breakdown Structure Number 1.4.2.6.1.8.1.2” Los Alamos National Laboratory letter EM/ER:94-J489 to J. Vozella (Environment, Safety, and Health Branch, DOE/LAAO) from J. Jansen (Project Manager, Environmental Restoration), Los Alamos, New Mexico. (LANL 1994, 43899)

EPA (US Environmental Protection Agency) December 28, 1994. Review and approval of RFI workplan for Operable Unit 1100, EPA letter to J. Vozella, (Chief, Environment, Safety, and Health Branch, DOE/LAAO) from A. Davis (Director, Hazardous Waste Management Division, EPA Region 6) Dallas, Texas. (EPA 1994, 52910.117)

Appendix A

Acronyms and Glossary

APPENDIX A ACRONYMS AND GLOSSARY

A-1.0 ACRONYMS AND ABBREVIATIONS

BMP	best management practice
BV	background value
CEARP	Comprehensive Environmental Assessment and Response Program
CFR	Code of Federal Regulations
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
D&D	decontamination and decommissioning
DOE	US Department of Energy
DOE-LAAO	US Department of Energy/Los Alamos Area Office
EOD	explosive ordnance disposal
EPA	US Environmental Protection Agency
ESL	ecological screening level
ER	Environmental Restoration (Project)
FIMAD	Facility for Information Management, Analysis, and Display
HE	high explosive
HI	hazard index
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine [2691-41-0]
HQ	hazard quotient
HRMB	Hazardous and Radioactive Materials Bureau
HSWA	Hazardous and Solid Waste Amendments
HWB	Hazardous Waste Bureau
ICPES	inductively coupled plasma emission spectroscopy
IWP	Installation Work Plan
JCI	Johnson Controls World Services Inc.
Laboratory	Los Alamos National Laboratory
LANL	Los Alamos National Laboratory
LASL	Los Alamos Scientific Laboratory
LIBS	laser-induced breakdown spectroscopy
NFA	no further action
NMED	New Mexico Environment Department
NOD	notice of deficiency
NPDES	National Pollutant Discharge Elimination System
OU	operable unit
PCB	polychlorinated biphenyl

PHERMEX	Pulsed, High-Energy, Radiographic Machine Emitting X-rays
PRG	preliminary remediation goal
PRS	potential release site
QA	quality assurance
RCRA	Resource Conservation and Recovery Act
RDX	cyclotrimethylenetrinitramine [121-82-4]
RFI	RCRA facility investigation
RSI	request for supplemental information
SAL	screening action level
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TA	technical area
TAL	target analyte list
TPH	total petroleum hydrocarbon
TSCA	Toxic Substances Control Act
UST	underground storage tank
UXO	unexploded ordnance
VCA	voluntary corrective action
VOC	volatile organic compound

A-2.0 GLOSSARY

analysis. Includes physical analysis, chemical analysis, and knowledge-of-process determinations. (Laboratory Hazardous Waste Facility Permit)

background level. Naturally occurring concentrations (levels) of an inorganic chemical and naturally occurring radionuclides in soil, sediment, and tuff.

background value (BV). A threshold used to identify site sample results that may be greater than background levels.

best management practices (BMPs). For facilities that manufacture, use, store, or *discharge* toxic or hazardous pollutants as defined by the 1977 Clean Water Act, a required program to control the potential spill or *release* of those materials to surface

chemical of potential concern (COPC). A chemical, detected at a site, that has the potential to adversely affect human receptors due to its concentration, distribution, and mechanism of toxicity. A COPC remains a concern until exposure pathways and receptors are evaluated in a site-specific human health risk assessment.

chemical of potential ecological concern (COPEC). A *chemical*, detected at a site, that has the potential to adversely affect ecological *receptors* due to its concentration, distribution, and mechanism of toxicity.

cleanup levels. Media-specific contaminant concentration levels that must be met by a selected corrective action. Cleanup levels are established by using criteria such as protection of human health and the environment; compliance with regulatory requirements; reduction of toxicity, mobility, or volume through treatment; long- and short-term effectiveness; implementability; cost; and public acceptance.

corrective action. Action to rectify conditions adverse to human health or the environment.

ecological screening level (ESL). An organism's exposure-response threshold for a given chemical constituent. The concentration of a substance in a particular medium corresponds to a hazard quotient (HQ) of 1.0 for a given organism below which no risk is indicated.

exposure pathway. Mode by which a receptor may be exposed to contaminants in environmental media (e.g., drinking water, ingesting food, or inhaling dust).

groundwater. Water in a subsurface saturated zone; water beneath the regional water table.

hazard index (HI). The sum of *hazard quotients* for multiple *contaminants* to which a *receptor* (j) is determined to be exposed, i.e., $HI_j = \sum_i HQ_{ij}$.

Hazardous and Solid Waste Amendments (HSWA). The Hazardous and Solid Waste Amendments of 1984 (Public Law No. 98-616, 98 Stat. 3221), which amended the Resource Conservation and Recovery Act of 1976, 42 U.S.C. § 6901 et seq.

hazardous waste. Any *solid waste* is generally a hazardous waste if it

- is not excluded from regulation as a hazardous waste,
- is listed in the regulations as a hazardous waste,

- exhibits any of the defined characteristics of hazardous waste (ignitability, corrosivity, reactivity, or toxicity), or
- is a mixture of *solid waste* and hazardous waste.

See 40 CFR 261.3 for a complete definition of hazardous waste.

hazard quotient (HQ) — The ratio of a calculated exposure (E) to or *dose* (D) from a given *contaminant* (I) to a given *receptor* (j) over a reference value (TRV) for *contaminant* (I) determined to be protective of *receptor* (j), i.e., $HQ_{ij} = E_{ij}$ [or D_{ij}]TRV_{ij}.

industrial-use scenario. Industrial use is the scenario in which current Laboratory operations continue. Any necessary remediation involves cleanup to standards designed to ensure a safe and healthy work environment for Laboratory workers.

migration. The movement of inorganic and organic species through unsaturated or saturated materials.

National Pollutant Discharge Elimination System (NPDES). The national program for both issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits and imposing requirements under Sections 307, 318, 402, and 405 of the Clean Water Act.

no further action (NFA). A recommendation that no further investigation or remediation is warranted based on specific criteria.

notice of deficiency (NOD). A notice issued to DOE and the Laboratory by the administrative authority which states that some aspect(s) of a plan, report, or application does not meet their requirements or that requires clarification or correction.

operable unit (OU). At the Laboratory, one of 24 areas originally established for administering the ER Project. Set up as groups of potential release sites, the OUs were aggregated based on geographic proximity for the purpose of planning and conducting RCRA facility assessments and RCRA facility investigations. As the project matured, it became apparent that 24 were too many to allow efficient communication and to ensure consistency in approach. Therefore, in 1994, the 24 OUs were reduced to 6 administrative “field units.”

outfall. The vent or end of a drain, pipe, sewer, ditch, or other conduit that carries wastewater, sewage, storm runoff or other *effluent* into a stream.

permit modification. A request by either the permittee or the administrative authority to change a condition of the Laboratory’s Hazardous Waste Facility Permit.

polychlorinated biphenyls (PCBs). Any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substances. PCBs are colorless, odorless compounds that are chemically, electrically, and thermally stable and have proven to be toxic to both humans and animals.

potential release site (PRS). Refers to potentially contaminated sites at the Laboratory that are identified either as solid waste management units (SWMUs) or areas of concern (AOCs). PRS refers to SWMUs and AOCs collectively.

preliminary remediation goal (PRG). Acceptable exposure levels, protective of human health and the environment, that are used as a *risk*-based tool for evaluating remedial alternatives.

radionuclide. A nuclide (species of atom) that exhibits radioactivity.

RCRA facility investigation (RFI). The investigation that determines if a release has occurred and the nature and extent of the contamination at a hazardous waste facility. The RFI is generally equivalent to the remedial investigation portion of the Comprehensive Environment Response, Compensation, and Liability Act (CERCLA) process.

receptor. A person, plant, animal, or geographical location that is exposed to a chemical or physical agent released to the environment by human activities**.**

release. Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of hazardous waste or hazardous constituents into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles that contain any hazardous wastes or hazardous constituents).

remediation. The process of reducing the concentration of a *contaminant* (or *contaminants*) in air, water, or soil media to a level that poses an acceptable *risk* to human health and the environment; the act of restoring a contaminated area to a usable condition based on specified standards.

request for supplemental information (RSI). A request issued to DOE and the Laboratory by the administrative authority which states that some aspect(s) of a plan or report does not meet their requirements. The ER Project must respond by providing additional information to address the identified issue or concern.

residential-use scenario. The standards for residential use are the most stringent of the three current- and future-use scenarios being considered by the ER Project and is the level of cleanup the EPA is currently specifying for SWMUs located off the Laboratory site and for those released for non-Laboratory use.

Resource Conservation and Recovery Act (RCRA). The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976. (40 CFR 270.2)

restricted area. Any area to which access is controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials. “Restricted area” shall not include areas used as residential quarters, although a separate room or rooms in a residential building may be set apart as a restricted area (10 CFR 60.2).

screening action level (SAL). *Medium*-specific concentration level for a *chemical* derived using conservative criteria below for which it is generally assumed that there is no potential for unacceptable *risk* to human health. The derivation of a SAL is based on conservative exposure and land-use assumptions. However, if an applicable *regulatory standard* exists that is less than the value derived by *risk*-based computations, it will be used for the SAL.

screening assessment. A process designed to determine whether contamination detected in a particular medium at a site may present a potentially unacceptable human-health and /or ecological risk. The assessment utilizes screening levels that are either human-health or ecologically based concentrations derived by using chemical-specific toxicity information and standardized exposure assumptions below which no additional actions are generally warranted.

site conceptual model. A qualitative or quantitative description of sources of contamination, environmental transport pathways for contamination, and biota that may be impacted by contamination (called receptors) and whose relationships describe qualitatively or quantitatively the release of

contamination from the sources, the movement of contamination along the pathways to the exposure points, and the uptake of contaminant by the receptors.

solid waste. Any garbage; refuse; sludge from a waste *treatment* plant, water-supply *treatment* plant, or air-pollution-control facility; and other discarded material including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities.

solid waste management unit (SWMU). Any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released. This definition includes regulated units (i.e., landfills, surface impoundments, waste piles, and land treatment units) but does not include passive leakage or one-time spills from production areas and units in which wastes have not been managed (e.g., product-storage areas).

target analyte. An element, *chemical*, or parameter, the concentration, mass, or magnitude of which is designed to be quantified by use of a particular test method.

technical area (TA). The Laboratory established technical areas as administrative units for all its operations. There are currently 49 active TAs spread over 43 square miles.

underground storage tank (UST). [as defined in Section 9001(1) of the Solid Waste Disposal Act]**.** The term "underground storage tank" means any one or combination of tanks (including underground pipes connected thereto) which is used to contain an accumulation of regulated substances, and the volume of which (including the volume of the underground pipes connected thereto) is 10% or more beneath the surface of the ground. Such term does not include any

(a) farm or residential tank of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;

(b) tank used for string heating oil for consumptive use on the premises where stored;

(c) septic tank;

(d) pipeline facility (including gathering lines) regulated under
  (i) the Natural Gas Pipeline Safety Act of 1968 (49 USC App. 1671 et seq.),
  (ii) the Hazardous Liquid Pipeline Safety Act of 1979 (49 USC App. 2001 et seq.), or
  (iii) which is an intrastate pipeline facility regulated under state laws comparable to the provisions of law referred to in Clause (i) or (ii) of this subparagraph;

(e) surface impoundment, pit, pond, or lagoon;

(f) stormwater or wastewater collection system;

(g) flow-through process tank;

(h) liquid trap or associated gathering lines directly related to oil or gas production and gathering operations; or

(i) storage tank situated in an underground area (such as a basement, cellar, mine working, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

unrestricted area. Any area, access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials and any area used for residential quarters (10 CFR 60.2).

Appendix B

Requested Modifications to Tables A, B, and C of Module VIII of the Laboratory's Hazardous Waste Facility Permit

Note:

This appendix contains the requested modifications to Tables A, B, and C of Module VIII. The date of each request is provided next to the SWMU proposed for deletion. Strike-through text indicates deletions, and boldface text indicates new text. The number at the bottom of each technical area listing denotes the number of SWMUs on Module VIII for that area.

Requested Modifications to Table A

Technical Area 0

SWMU Number
0-001
0-003
~~0-011(a)~~ June 2001
0-011(c)
0-011(d)
~~0-011(e)~~ June 2001
0-012
~~0-016~~ June 2000
0-017
0-018(a)
0-019
0-028(a)
0-028(b)
0-030(a)
0-030(b)
0-030(g)
0-030(l)
0-030(m)
~~0-033(a)~~ June 2000
0-039 ~~(20)~~ **(16)** June 2001

Technical Area 1

1-001(a)
1-001(b)
1-001(c)
1-001(d)
1-001(e)
1-001(f)
1-001(g)
~~1-001(m)~~ June 2001
1-001(o)
1-001(s)
1-001(t)
1-001(u)
1-002
1-003(a)
1-003(d)
1-003(e)
1-006(a)
1-006(b)
1-006(c)
1-006(d)
1-006(h)
1-006(n)
1-006(o)
1-007(a)
1-007(b)
1-007(c)
1-007(d)
1-007(e)
1-007(j)
1-007(l) ~~(30)~~ **(29)** June 2001

Technical Area 2

2-005
2-006(a)
2-006(b)
2-007
2-008(a)
~~2-008(b)~~ June 2000
2-009(a)
2-009(b)
2-009(c) ~~(9)~~ **(8)** June 2000

Technical Area 3

3-001(k)
3-002(c)
3-003(a)
3-003(b)
3-003(c)
3-009(a)
3-009(d)
3-010(a)
3-012(b)
3-013(a)
3-014(a)
3-014(b)
3-014(c)
3-014(d)
3-014(e)
3-014(f)
3-014(g)
3-014(h)
3-014(i)
3-014(j)
3-014(k)
3-014(l)
3-014(m)
3-014(n)
3-014(o)
3-014(p)
3-014(q)
3-014(r)
3-014(s)
3-014(t)
3-014(u)
3-015
3-026(d)
3-028
3-033
3-036(a)
3-036(c)
3-036(d)
3-037
3-038(a)
3-038(b)
3-056(a)
3-056(c) (43)

Technical Area 4

4-001
4-002
4-003(a)
4-003(b) (4)

Technical Area 5

5-001(a)
5-001(b)
5-002
5-003
5-004
5-005(a)
5-005(b)
5-006(b)
5-006(c)
5-006(e)
5-006(h) (11)

Technical Area 6

6-001(a)
6-001(b)
6-002
6-003(a)
6-003(c)
6-003(d)
6-003(e)
6-003(f)
~~6-003(g)~~ June 2000
6-003(h)
6-005
6-006
6-007(a)
6-007(b)
6-007(c)
6-007(d)
6-007(e)
6-007(f)
6-007(g) ~~(19)~~ **(18)** June 2000

Technical Area 7

7-001(a)
7-001(b)
7-001(c)
7-001(d) (4)

Technical Area 8

8-002
8-003(a)
8-004(a)
8-004(b)
8-004(c)
8-004(d)
~~8-005~~ June 2001
8-006(a)
8-009(a)
8-009(d)
8-009(e)
~~C-8-010~~ June 2001
~~(12)~~ **(10)** June 2001

Technical Area 9

9-001(a)
9-001(b)
9-001(c)
9-001(d)
9-002
9-003(a)
9-003(b)
9-003(d)
9-003(e)
9-003(g)
9-003(h)
9-003(i)
9-004(a)
9-004(b)
9-004(c)
9-004(d)
9-004(e)
9-004(f)
9-004(g)
9-004(h)
9-004(i)
9-004(j)
9-004(k)
9-004(l)
9-004(m)
9-004(n)
9-004(o)
9-005(a)
9-005(d)
9-005(g)
9-006
9-008(b)
9-009
9-013
C-9-001 (35)

Technical Area 10

10-001(a)
10-001(b)
10-001(c)
10-001(d)
10-002(a)
10-002(b)
10-003(a)
10-003(b)
10-003(c)
10-003(d)
10-003(e)
10-003(f)
10-003(g)
10-003(h)
10-003(i)
10-003(j)
10-003(k)
10-003(l)
10-003(m)
10-003(n)
10-003(o)
10-004(a)
10-004(b)
10-005
10-006
10-007 (26)

Technical Area 11

11-001(a)
11-001(b)
11-001(c)
11-002
11-004(a)
11-004(b)
11-004(c)
11-004(d)
11-004(e)
11-005(a)
11-005(b)
11-005(c)
11-006(a)
11-006(b)
11-006(c)
11-006(d)
11-009
11-011(a)
11-011(b)
11-011(d) (20)

Requested Modifications to Table A

Technical Area 12

12-001(a)
12-001(b)
12-002 (3)

Technical Area 13

13-001
13-002
13-003(a)
13-004 (4)

Technical Area 14

14-002(a)
14-002(b)
14-002(c)
14-002(d)
14-002(e)
14-002(f)
~~14-003~~ June 2001
14-005
14-006
14-007
14-009
14-010 ~~(12)~~ **(11)** June 2001

Technical Area 15

15-002
15-003
15-004(a)
15-004(b)
15-004(c)
15-004(f)
15-004(g)
15-004(i)
15-006(a)
15-006(b)
15-006(c)
15-006(d)
15-007(a)
15-007(b)
15-007(c)
15-007(d)
15-008(a)
15-008(b)
15-008(c)
15-008(d)
15-009(a)
15-009(b)
15-009(c)
15-009(e)
15-009(f)
15-009(g)
15-009(h)
15-009(i)
~~15-009(j)~~ June 2000
15-009(k)
15-010(a)
15-010(b)
~~15-010(c)~~ June 2001
15-011(a)
15-011(b)
15-011(c)
~~15-012(a)~~ June 2000
~~15-012(b)~~ June 2000
15-014(a)
15-014(b)
15-014(i)
15-014(j)
15-014(k)
~~15-014(l)~~ June 2001 ~~(44)~~ **(39)** June 2001

Technical Area 16

16-001(a)
16-001(b)
16-001(c)
16-001(d)
16-001(e)
16-003(a)
16-003(b)
16-003(c)
16-003(d)
16-003(e)
16-003(f)
16-003(g)
16-003(h)
16-003(i)
16-003(j)
16-003(k)
16-003(l)
16-003(m)
16-003(n)
16-003(o)
16-004(a)
16-004(b)
16-004(c)
16-004(d)
16-004(e)
16-004(f)
16-005(g)
16-005(n)
16-006(a)
16-006(c)
16-006(d)
16-006(e)
16-007(a)
16-008(a)
16-009(a)
16-010(a)
~~16-010(b)~~ Aug. 2001
~~16-010(c)~~-Aug. 2001
~~16-010(d)~~-Aug. 2001
~~16-010(e)~~ Aug. 2001
~~16-010(f)~~ Aug. 2001
16-010(h)
16-010(i)
16-010(j)
16-010(k)
16-010(l)
16-010(m)
16-010(n)
16-013
16-016(a)
16-016(b)
16-016(c)
16-018
16-019
16-020
16-021(a)
16-021(c)
16-026(b)
16-026(c)
16-026(d)
16-026(e)
16-026(h2)
16-026(j2)
16-026(v)
16-029(a)
16-029(b)
16-029(c)
16-029(d)
16-029(e)
16-029(f)
16-029(g)
16-030(h)
16-035
16-036 ~~(74)~~ **(69)** Aug. 2001

Technical Area 18

18-001(a)
18-001(b)
18-001(c)
18-002(a)
18-002(b)
18-003(a)
18-003(b)
18-003(c)
18-003(d)
18-003(e)
18-003(f)
18-003(g)
18-003(h)
18-004(a)
18-004(b)
18-005(a)
18-012(a)
18-012(b) (18)

Technical Area 19

19-001
19-002
19-003 (3)

Technical Area 20

20-001(a)
20-001(b)
20-001(c)
20-002(a)
20-002(b)
20-002(c)
20-002(d)
~~20-003(a)~~ June2001
20-005 ~~(9)~~ **(8)** June 2001

Technical Area 21

21-002(a)
21-003
21-004(b)
21-004(c)
~~21-005~~ June 2000
21-006(a)
21-006(b)
21-006(c)
21-006(d)
21-006(e)
21-007
21-010(a)
21-010(b)
21-010(c)
21-010(d)
21-010(e)
21-010(f)
21-010(g)
21-010(h)
21-011(a)
21-011(b)
21-011(c)
21-011(d)
21-011(e)
21-011(f)
21-011(g)
21-011(i)
21-011(j)
21-011(k)
21-012(b)
21-013(a)
21-013(b)
21-013(c)
21-013(d)
21-013(e)
21-014
21-015
21-016(a)
21-016(b)
21-016(c)
21-017(a)
21-017(b)
21-017(c)
21-018(a)
21-018(b)
21-021
21-022(a)
21-022(b)
21-022(c)
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21-022(e)
21-022(f)
21-022(g)
21-022(h)
21-022(i)
21-022(j)
21-023(a)
21-023(b)
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21-024(b)
21-024(c)
21-024(d)
21-024(e)
21-024(f)
21-024(g)
21-024(h)
21-024(i)
21-024(j)
21-024(k)
21-024(l)
21-024(n)
21-024(o)
21-026(a)

Requested Modifications to Table A

21-026(b)
21-027(a)
21-027(c)
21-027(d)
21-029
~~(80)~~ **(79)**
June 2000

Technical Area 22

22-010(a)
22-010(b)
22-011
22-012
22-014(a)
22-014(b)
22-015(a)
22-015(b)
22-015(c)
22-015(d)
22-015(e)
22-016 (12)

Technical Area 26

26-001
26-002(a)
26-002(b)
26-003 (4)

Technical Area 27

27-002
27-003 (2)

Technical Area 31

31-001 (1)

Technical Area 32

32-001
32-002(a)
32-002(b) (3)

Technical Area 33

33-001(a)
33-001(b)
33-001(c)
33-001(d)
33-001(e)
33-002(a)
33-002(b)
33-002(c)
33-002(d)
33-002(e)
33-003(a)
33-003(b)
33-004(a)
33-004(b)
33-004(c)
33-004(d)
33-004(g)
33-004(h)
33-004(i)
33-004(j)
33-004(k)
33-004(m)
33-005(a)
33-005(b)
33-005(c)
33-006(a)
33-006(b)
33-007(a)
33-007(b)
33-007(c)
33-008(a)
33-008(b)
33-009
33-010(a)
33-010(b)
33-010(c)
33-010(d)
33-010(f)
33-010(g)
33-010(h)
33-011(a)
33-011(c)
33-011(d)
33-011(e)
33-012(a)
33-013
33-014
33-015
33-016
33-017 (50)

Technical Area 35

35-002
35-003(a)
35-003(b)
35-003(c)
35-003(d)
35-003(e)
35-003(f)
35-003(g)
35-003(h)
35-003(j)
35-003(k)
35-003(l)
35-003(m)
35-003(n)
35-003(o)
35-003(p)
35-003(q)
35-004(a)
35-004(b)
35-004(g)
35-004(h)
35-008
35-009(a)
35-009(b)
35-009(c)
35-009(d)
35-009(e)
35-010(a)
35-010(b)
35-010(c)
35-010(d)
35-013(a)
35-013(b)
35-013(c)
35-014(a)
35-014(b)
35-014(e)
35-014(g)
35-015(a)
35-015(b)
35-016(a)
35-016(c)
35-016(d)
35-016(i)
35-016(k)
35-016(m)
35-016(o)
35-016(p)
35-016(q) (49)

Technical Area 36

36-001
36-002
36-003(a)
36-003(b)
36-004(d)
36-005
36-006
C-36-003 (8)

Technical Area 39

39-001(a)
39-001(b)
39-002(a)
39-004(a)
39-004(b)
~~39-004(c)~~ Aug. 2001
~~39-004(d)~~ Aug. 2001
39-004(e)
39-005
39-006(a)
39-007(a)
39-008 ~~(12)~~ **(10)**
Aug. 2001

Technical Area 40

40-001(b)
40-001(c)
~~40-003(a)~~ June 2000
40-004
40-005
40-006(a)
40-006(b)
40-006(c)
40-009
40-010 ~~(10)~~ **(9)**
June 2000

Technical Area 41

41-001
41-002(a)
41-002(b)
41-002(c) (4)

Technical Area 42

42-001(a)
42-001(b)
42-001(c)
42-002(b)
42-003 (5)

Technical Area 43

43-001(a)
43-002 (2)

Technical Area 45

45-001
45-002
45-003
45-003 (4)

Technical Area 46

46-002
46-003(a)
46-003(b)
46-003(c)
46-003(d)
46-003(e)
46-003(f)
46-003(g)
46-003(h)
46-004(a)
46-004(b)
46-004(c)
46-004(d)
46-004(e)
46-004(f)
46-004(g)
46-004(h)
46-004(a2)
46-004(b2)
46-004(c2)
46-004(d2)
46-004(m)
46-004(p)
46-004(q)
46-004(r)
46-004(s)
46-004(t)
46-004(u)
46-004(v)
46-004(w)
46-004(x)
46-004(y)
46-004(z)
46-005
46-006(a)
46-006(b)
46-006(c)
46-006(d)
46-006(f)
46-006(g)
46-007
46-008(a)
46-008(b)
46-008(d)
46-008(e)
46-008(f)
46-008(g)
46-009(a)
46-009(b)
46-010(d) (50)

Technical Area 48

48-002(a)
48-002(b)
48-003
48-004(a)
48-004(b)
48-004(c)
48-005
48-007(a)
48-007(b)

Requested Modifications to Table A

48-007(c)
48-007(d)
48-007(f)
48-010 (13)

Technical Area 49

49-001(a)
49-001(b)
49-001(c)
49-001(d)
49-001(e)
49-001(f)
49-001(g)
49-003
49-004
49-005(a)
49-006 (11)

Technical Area 50

~~50-001(a)~~ Aug. 2001
50-002(a)
50-002(b)
50-002(c)
50-004(a)
50-004(b)
50-004(c)
50-006(a)
50-006(c)
50-006(d)
50-009
50-011(a)
~~(12)~~ **(11)**
Aug. 2000

Technical Area 52

52-001(d)
52-002(a) (2)

Technical Area 53

53-001(a)
53-001(b)
53-002(a)
53-002(b)
53-005
53-006(b)
53-006(c)
53-006(d)
53-006(e)
53-006(f)
53-007(a) (11)

Technical Area 54

54-001(a)
54-004 (excluding Shaft No. 9)
54-005
54-006
54-007(a)
54-007(c)
54-012(b)
54-013(b)
54-014(b)
54-014(c)
54-014(d)
54-015(k)
54-017
54-018
54-019
54-020 (16)

Technical Area 55

55-008
55-009 (2)

Technical Area 60

60-002
60-005(a)
60-006(a)
60-007(a)
60-007(b) (5)

Technical Area 61

61-002
61-005
61-006
61-007 (4)

Technical Area 63

63-001(a)
63-001(b) (2)

Technical Area 69

69-001 (1)

Technical Area 73

73-001(a)
73-001(b)
73-001(c)
73-001(d)
73-002
73-004(a)
73-004(b)
73-004(c)
73-004(d)
73-005
73-006 (11)

Total SWMUs in Table A = ~~786~~ **760**

Table A.1
No Further Action SWMUs Removed from Table A
Through a Class III Permit Modification and Date of Removal

0-005	12-23-98										
0-011(a)		3-039(a)	12-23-98	**15-012(b)**		16-012(o)	12-23-98	39-003	12-23-98		
0-011(e)		3-043(e)	05-02-01	**15-014(l)**		16-012(p)	12-23-98	**39-004(c)**			
0-016		3-044(a)	05-02-01	15-014(m)	12-23-98	16-012(q)	12-23-98	**39-004(d)**			
0-033(a)		**6-003(g)**		16-005(i)	12-23-98	16-012(r)	12-23-98	39-006(b)	12-23-98		
1-001(h)	12-23-98	7-003(c)	12-23-98	16-005(o)	12-23-98	16-012(s)	12-23-98	40-001(a)	12-23-98		
1-001(i)	12-23-98	7-003(d)	12-23-98	16-006(b)	12-23-98	16-012(t)	12-23-98	**40-003(a)**			
1-001(j)	12-23-98	8-003(b)	12-23-98	16-006(f)	12-23-98	16-012(u)	12-23-98	46-008(c)	12-23-98		
1-001(k)	12-23-98	8-003(c)	12-23-98	**16-010(b)**		16-012(v)	12-23-98	**50-001(a)**			
1-001(l)	12-23-98	**8-005**		**16-010(c)**		16-012(w)	12-23-98	52-001(a)	12-23-98		
1-001(m)		8-006(b)	12-23-98	**16-010(d)**		16-012(x)	12-23-98	52-001(b)	12-23-98		
1-001(n)	12-23-98	**C-8-010**		**16-010(e)**		16-012(y)	12-23-98	52-001(c)	12-23-98		
2-008(b)		8-007	12-23-98	**16-010(f)**		16-012(z)	12-23-98	52-002(b)	12-23-98		
3-001(a)	12-23-98	9-003(c)	12-23-98	16-010(g)	12-23-98	18-007	05-02-01	52-002(c)	12-23-98		
3-001(b)	12-23-98	9-003(f)	12-23-98	16-012(a)	12-23-98	**20-003(a)**		52-002(d)	12-23-98		
3-001(c)	12-23-98	9-005(b)	12-23-98	16-012(b)	12-23-98	**21-005**		52-002(e)	12-8-97		
3-002(b)	12-23-98	9-005(c)	12-23-98	16-012(c)	12-23-98	21-012(a)	12-23-98	52-002(f)	12-23-98		
3-009(b)	12-23-98	9-005(e)	12-23-98	16-012(d)	12-23-98	21-024(m)	12-23-98	53-007(b)	12-23-98		
3-009(c)	05-02-01	9-005(f)	12-23-98	16-012(e)	12-23-98	21-027(b)	12-23-98	54-001(c)	12-23-98		
3-009(e)	12-23-98	9-005(h)	12-23-98	16-012(f)	12-23-98	27-001	05-02-01	54-007(b)	05-02-01		
3-009(f)	12-23-98	9-007	12-23-98	16-012(g)	12-23-98	33-004(e)	12-23-98	54-013(a)	12-23-98		
3-009(g)	05-02-01	11-011(c)	05-02-01	16-012(h)	12-23-98	33-004(f)	12-23-98	54-015(h)	05-02-01		
3-009(h)	12-23-98	11-007	12-23-98	16-012(i)	12-23-98	35-003(i)	12-23-98	59-001	05-02-01		
3-012(a)	12-23-98	**14-003**		16-012(j)	12-23-98	35-004(e)	05-02-01	61-004(a)	05-02-01		
3-018	12-23-98	14-004(b)	12-23-98	16-012(k)	12-23-98	35-006	05-02-01				
3-020(a)	12-23-98	**15-009(j)**		16-012(l)	12-23-98	35-011(a)	05-02-01	SWMUs removed from Table A = ~~106~~ **132**			
3-035(a)	12-23-98	**15-010(e)**		16-012(m)	12-23-98	35-013(d)	05-02-01				
3-035(b)	12-23-98	**15-012(a)**		16-012(n)	12-23-98	36-003(c)	12-23-98				

Requested Modifications to Table B Priority SWMUs*

SWMU Number
1-001(a)
1-001(b)
1-001(c)
1-001(d)
1-001(e)
1-001(f)
1-001(g)
1-001(m)
1-002
1-003(a)
2-005
2-008(a)
3-010(a)
3-012(b)
3-013(a)
3-015
3-029(a)
5-005(a)
6-007(a)
8-003(a)
9-008(a)
9-008(b)
9-009
9-013
10-003(a)
10-003(b)
10-003(c)
10-003(d)
10-003(e)
10-003(f)
10-006
11-004(a)
11-004(b)
11-004(c)
11-004(d)
11-004(e)
11-005(a)
11-005(b)
11-006(a)
13-004
15-002
15-006(a)
15-006(b)
15-006(c)
15-006(d)
15-007(a)
15-007(b)
15-007(c)
15-007(d)
15-008(a)
15-008(b)
15-008(c)
15-008(d)
15-009(a)
15-009(b)
~~15-012(a)~~ June 2000
~~15-012(b)~~ June 2000
15-012(c)
15-012(d)
15-012(e)
15-012(f)
15-012(g)
16-001(b)
16-001(c)
16-001(d)
16-001(e)
16-005(n)
16-006(a)
16-006(c)
16-006(d)
16-006(e)
16-007
16-008(b)
16-016
16-018
16-019
16-020
16-021(a)
18-001(a)
18-003(a)
18-003(b)
18-003(c)
18-003(d)
18-003(e)
18-003(f)
18-003(g)
18-003(h)
21-006(a)
21-006(b)
21-006(c)
21-006(d)
21-006(e)
21-010(a)
21-010(b)
21-010(c)
21-010(d)
21-010(e)
21-010(f)
21-010(g)
21-010(h)
21-011(a)
21-011(b)
21-011(c)
21-011(d)
21-011(e)
21-011(f)
21-011(g)
21-011(h)
21-011(i)
21-014
21-015
21-016(a)
21-017(a)
21-017(b)
21-017(c)
21-018(a)
21-018(b)
22-015(c)
33-002(a)
33-002(b)
33-002(c)
33-017
35-003(a)
35-003(b)
35-003(c)
35-003(d)
35-003(e)
35-003(f)
35-003(g)
35-003(h)
35-003(j)
35-003(k)
35-003(l)
35-003(m)
35-003(n)
35-003(o)
35-003(p)
35-003(q)
35-010(a)
35-010(b)
35-010(c)
35-010(d)
36-003(a)
36-003(b)
39-001(a)
39-001(b)
41-001
46-002
46-006(a)
46-006(b)
46-006(c)
46-006(d)
46-007
49-001(a)
50-006(a)
50-006(c)
50-006(d)
50-009
54-004 (excluding Shaft No. 9)
54-005
60-005(a)
73-001(a)

Total SWMUs in Table B = ~~162~~ **160**

* As RFI work progresses, EPA may identify more SWMUs to be added to the list to be addressed in the installation work plans.

Table B.1
No Further Action SWMUs Removed from Table B
Through a Class III Permit Modification and Date of Removal

0-005	12-23-98	1-001(l)	12-23-98	8-003(c)	12-23-98	16-006(f)	12-23-98	54-015(h) 05-02-01
1-001(h)	12-23-98	1-001(n)	12-23-98	8-007	12-23-98	21-012(a)	12-23-98	
1-001(i)	12-23-98	3-012(a)	12-23-98	**15-012(a)**		35-003(i)	12-23-98	SWMUs removed from Table B = ~~17~~ **19**
1-001(j)	12-23-98	3-020(a)	12-23-98	**15-012(b)**		35-006	05-02-01	
1-001(k)	12-23-98	8-003(b)	12-23-98	16-005(o)	12-23-98	36-003(c)	12-23-98	

Requested Modifications to Table C

RFI Work Plan due July 7, 1994: Technical Area 16

16-005(a)
16-005(c)
16-005(d)
16-005(e)
16-005(h)
16-005(j)
16-005(k)
16-005(l)
16-005(m)
16-006(g)
16-006(h)
16-015(a)
16-015(b)
16-017
16-024(e)
16-025(a)
16-025(b)
16-025(b2)
16-025(c2)
16-025(d)
16-025(e)
16-025(f)
16-025(g)
16-025(h)
16-025(i)
16-025(j)
16-025(k)
16-025(l)
16-025(m)
16-025(n)
16-025(o)
16-025(p)
16-025(q)
16-025(r)
16-025(s)
16-025(t)
16-025(u)
16-025(v)
16-025(w)
16-025(x)
16-025(y)
16-025(z)
16-026(m)
16-026(n)
16-026(o)
16-026(p)
16-026(q)
16-026(s)
16-026(w)
16-028(a)
16-029(a2)
16-029(b2)
16-029(c2)
16-029(d2)
16-029(e2)
16-029(f2)
16-029(g2)
16-029(h2)
16-029(k)
16-029(l)
16-029(m)
16-029(n)
16-029(o)
16-029(p)
16-029(q)
16-029(r)
16-029(s)
16-029(t)
16-029(u)
16-029(v)
16-029(w)
16-029(x)
16-029(y)
16-029(z)
16-031(c)
16-031(d)
16-032(a)
16-032(c)
16-034(a)
16-034(b)
16-034(c)
16-034(d)
16-034(e)
16-034(f)
16-034(l)
16-034(m)
16-034(n)
16-034(o)
16-034(p)
C-16-025
C-16-026
Total SWMUs = 91*

RFI Work Plan due July 7, 1995: Technical Area 16

16-016(d)
16-016(e)
16-016(g)
16-025(a2)
16-025(d2)
~~16-025(e2)~~ June 2001
~~16-025(f2)~~ June 2001
~~16-025(h2)~~ June 2001
16-026(a)
~~16-026(a2)~~ June 2001
16-026(b2)
16-026(c2)
~~16-026(d2)~~ June 2001
~~16-026(e2)~~ June 2001
16-026(f)
~~16-026(f2)~~ June 2001
16-026(g)
~~16-026(g2)~~ June 2001
~~16-026(h)~~ June 2001
16-026(i)
16-026(j)
~~16-026(k)~~ June 2001
16-026(k2)
16-026(l)
16-026(r)
~~16-026(t)~~ June 2001
16-026(u)
~~16-026(x)~~ June 2001
16-026(y)
16-026(z)
16-028(b)
16-028(c)
16-028(d)
16-028(e)
16-029(h)
16-029(i)
16-029(j)
16-030(a)
~~16-030(b)~~ June 2001
16-030(c)
~~16-030(e)~~ June 2001
~~16-030(f)~~ June 2001
16-031(a)
16-031(b)
16-031(e)
16-031(f)
16-031(h)
16-034(h)
16-034(i)
16-034(j)
16-034(k)
Total SWMUs = ~~51~~ 36

RFI Work Plan due May 21, 1995: Operable Unit 1114

3-009(i)
3-009(j)
3-011
3-021
3-025(b)
3-026(c)
3-029
3-031
3-034(a)
3-034(b)
3-043(c)
3-045(a)
3-045(b)
3-045(c)
3-045(e)
3-045(f)
3-045(g)
3-045(h)
~~3-046~~ June 2001
3-049(a)
3-049(b)
3-049(e)
3-050(a)
3-050(d)
3-050(f)
3-050(g)
3-052(a)
3-052(e)
3-052(f)
3-054(a)
3-054(b)
3-054(c)
3-054(d)
3-054(e)
3-055(a)
3-055(c)
3-056(d)
3-056(l)
3-059
Total SWMUs = ~~39~~ **38**

* 20 additional SWMUs were added after work plan review

Table C.1
No Further Action SWMUs Removed from Table C
Through a Class III Permit Modification and Date of Removal

3-002(a)	05-02-01	**3-046**		16-006(i)	12-23-98	**16-026(g2)**		16-032(d)	12-23-98
3-002(d)	05-02-01	3-049(c)	05-02-01	16-025(c)	12-23-98	**16-026(h)**		16-032(e)	12-23-98
3-009(c)	05-02-01	3-049(d)	05-02-01	**16-025(e2)**		16-026(i2)	12-23-98	16-034(g)	12-23-98
3-019	05-02-01	3-050(e)	05-02-01	**16-025(f2)**		**16-026(k)**			
3-024	12-8-97	3-052(c)	05-02-01	16-025(g2)	12-23-98	**16-026(t)**		SWMUs removed from	
3-025(a)	05-02-01	3-055(d)	05-02-01	**16-025(h2)**		**16-026(x)**		Table C = ~~27~~ **43**	
3-026(b)	05-02-01	3-056(m)	05-02-01	**16-026(a)**		**16-030(b)**			
3-032	05-02-01	3-056(n)	05-02-01	**16-026(d2)**		**16-030(e**)			
3-045(d)	12-8-97	16-005(b)	05-02-01	**16-026(e2)**		**16-030(f)**			
3-045(i)	05-02-01	16-005(f)	12-23-98	**16-026(f2)**		16-031(g)	12-23-98		

Appendix C

Proposed Tables A, B and C of Module VIII
of the Laboratory's Hazardous Waste Facility Permit

Note:

This appendix contains proposed Tables A, B, and C of Module VIII. The number at the bottom of each technical area listing denotes the number of SWMUs on Module VIII for that area.

Proposed Table A

Technical Area 0
SWMU Number
0-001
0-003
0-011(c)
0-011(d)
0-012
0-017
0-018(a)
0-019
0-028(a)
0-028(b)
0-030(a)
0-030(b)
0-030(g)
0-030(l)
0-030(m)
0-039 (16)

Technical Area 1
1-001(a)
1-001(b)
1-001(c)
1-001(d)
1-001(e)
1-001(f)
1-001(g)
1-001(o)
1-001(s)
1-001(t)
1-001(u)
1-002
1-003(a)
1-003(d)
1-003(e)
1-006(a)
1-006(b)
1-006(c)
1-006(d)
1-006(h)
1-006(n)
1-006(o)
1-007(a)
1-007(b)
1-007(c)
1-007(d)
1-007(e)
1-007(j)
1-007(l) (29)

Technical Area 2
2-005
2-006(a)
2-006(b)
2-007
2-008(a)
2-009(a)
2-009(b)
2-009(c) (8)

Technical Area 3
3-001(k)
3-002(c)
3-003(a)
3-003(b)
3-003(c)
3-009(a)
3-009(d)
3-010(a)
3-012(b)
3-013(a)
3-014(a)
3-014(b)
3-014(c)
3-014(d)
3-014(e)
3-014(f)
3-014(g)
3-014(h)
3-014(i)
3-014(j)
3-014(k)
3-014(l)
3-014(m)
3-014(n)
3-014(o)
3-014(p)
3-014(q)
3-014(r)
3-014(s)
3-014(t)
3-014(u)
3-015
3-026(d)
3-028
3-033
3-036(a)
3-036(c)
3-036(d)
3-037
3-038(a)
3-038(b)
3-056(a)
3-056(c) (43)

Technical Area 4
4-001
4-002
4-003(a)
4-003(b) (4)

Technical Area 5
5-001(a)
5-001(b)
5-002
5-003
5-004
5-005(a)
5-005(b)
5-006(b)
5-006(c)
5-006(e)
5-006(h) (11)

Technical Area 6
6-001(a)
6-001(b)
6-002
6-003(a)
6-003(c)
6-003(d)
6-003(e)
6-003(f)
6-003(h)
6-005
6-006
6-007(a)
6-007(b)
6-007(c)
6-007(d)
6-007(e)
6-007(f)
6-007(g) (18)

Technical Area 7
7-001(a)
7-001(b)
7-001(c)
7-001(d) (4)

Technical Area 8
8-002
8-003(a)
8-004(a)
8-004(b)
8-004(c)
8-004(d)
8-006(a)
8-009(a)
8-009(d)
8-009(e) (10)

Technical Area 9
9-001(a)
9-001(b)
9-001(c)
9-001(d)
9-002
9-003(a)
9-003(b)
9-003(d)
9-003(e)
9-003(g)
9-003(h)
9-003(i)
9-004(a)
9-004(b)
9-004(c)
9-004(d)
9-004(e)
9-004(f)
9-004(g)
9-004(h)
9-004(i)
9-004(j)
9-004(k)
9-004(l)
9-004(m)
9-004(n)
9-004(o)
9-005(a)
9-005(d)
9-005(g)
9-006
9-008(b)
9-009
9-013
C-9-001 (35)

Technical Area 10
10-001(a)
10-001(b)
10-001(c)
10-001(d)
10-002(a)
10-002(b)
10-003(a)
10-003(b)
10-003(c)
10-003(d)
10-003(e)
10-003(f)
10-003(g)
10-003(h)
10-003(i)
10-003(j)
10-003(k)
10-003(l)
10-003(m)
10-003(n)
10-003(o)
10-004(a)
10-004(b)
10-005
10-006
10-007 (26)

Technical Area 11
11-001(a)
11-001(b)
11-001(c)
11-002
11-004(a)
11-004(b)
11-004(c)
11-004(d)
11-004(e)
11-005(a)
11-005(b)
11-005(c)
11-006(a)
11-006(b)
11-006(c)
11-006(d)
11-009
11-011(a)
11-011(b)
11-011(d) (20)

Technical Area 12
12-001(a)
12-001(b)
12-002 (3)

Technical Area 13
13-001
13-002
13-003(a)
13-004 (4)

Proposed Table A

Technical Area 14

14-002(a)
14-002(b)
14-002(c)
14-002(d)
14-002(e)
14-002(f)
14-005
14-006
14-007
14-009
14-010 (11)

Technical Area 15

15-002
15-003
15-004(a)
15-004(b)
15-004(c)
15-004(f)
15-004(g)
15-004(i)
15-006(a)
15-006(b)
15-006(c)
15-006(d)
15-007(a)
15-007(b)
15-007(c)
15-007(d)
15-008(a)
15-008(b)
15-008(c)
15-008(d)
15-009(a)
15-009(b)
15-009(c)
15-009(e)
15-009(f)
15-009(g)
15-009(h)
15-009(i)
15-009(k)
15-010(a)
15-010(b)
15-011(a)
15-011(b)
15-011(c)
15-014(a)
15-014(b)
15-014(i)
15-014(j)
15-014(k) (39)

Technical Area 16

16-001(a)
16-001(b)
16-001(c)
16-001(d)
16-001(e)
16-003(a)
16-003(b)
16-003(c)
16-003(d)
16-003(e)
16-003(f)
16-003(g)
16-003(h)
16-003(i)
16-003(j)
16-003(k)
16-003(l)
16-003(m)
16-003(n)
16-003(o)
16-004(a)
16-004(b)
16-004(c)
16-004(d)
16-004(e)
16-004(f)
16-005(g)
16-005(n)
16-006(a)
16-006(c)
16-006(d)
16-006(e)
16-007(a)
16-008(a)
16-009(a)
16-010(a)
16-010(h)
16-010(i)
16-010(j)
16-010(k)
16-010(l)
16-010(m)
16-010(n)
16-013
16-016(a)
16-016(b)
16-016(c)
16-018
16-019
16-020
16-021(a)
16-021(c)
16-026(b)
16-026(c)
16-026(d)
16-026(e)
16-026(h2)
16-026(j2)
16-026(v)
16-029(a)
16-029(b)
16-029(c)
16-029(d)
16-029(e)
16-029(f)
16-029(g)
16-030(h)
16-035
16-036 (69)

Technical Area 18

18-001(a)
18-001(b)
18-001(c)
18-002(a)
18-002(b)
18-003(a)
18-003(b)
18-003(c)
18-003(d)
18-003(e)
18-003(f)
18-003(g)
18-003(h)
18-004(a)
18-004(b)
18-005(a)
18-012(a)
18-012(b) (18)

Technical Area 19

19-001
19-002
19-003 (3)

Technical Area 20

20-001(a)
20-001(b)
20-001(c)
20-002(a)
20-002(b)
20-002(c)
20-002(d)

Technical Area 21

21-002(a)
21-003
21-004(b)
21-004(c)
21-006(a)
21-006(b)
21-006(c)
21-006(d)
21-006(e)
21-007
21-010(a)
21-010(b)
21-010(c)
21-010(d)
21-010(e)
21-010(f)
21-010(g)
21-010(h)
21-011(a)
21-011(b)
21-011(c)
21-011(d)
21-011(e)
21-011(f)
21-011(g)
21-011(i)
21-011(j)
21-011(k)
21-012(b)
21-013(a)
21-013(b)
21-013(c)
21-013(d)
21-013(e)
21-014
21-015
21-016(a)
21-016(b)
21-016(c)
21-017(a)
21-017(b)
21-017(c)
21-018(a)
21-018(b)
21-021
21-022(a)
21-022(b)
21-022(c)
21-022(d)
21-022(e)
21-022(f)
21-022(g)
21-022(h)
21-022(i)
21-022(j)
21-023(a)
21-023(b)
21-023(c)
21-023(d)
21-024(a)
21-024(b)
21-024(c)
21-024(d)
21-024(e)
21-024(f)
21-024(g)
21-024(h)
21-024(i)
21-024(j)
21-024(k)
21-024(l)
21-024(n)
21-024(o)
21-026(a)
21-026(b)
21-027(a)
21-027(c)
21-027(d)
21-029 (79)

Technical Area 22

22-010(a)
22-010(b)
22-011
22-012
22-014(a)
22-014(b)
22-015(a)
22-015(b)
22-015(c)
22-015(d)
22-015(e)
22-016 (12)

Technical Area 26

26-001
26-002(a)
26-002(b)
26-003 (4)

Technical Area 27

27-002
27-003 (2)

Proposed Table A

Technical Area 31

31-001 (1)

Technical Area 32

32-001
32-002(a)
32-002(b) (3)

Technical Area 33

33-001(a)
33-001(b)
33-001(c)
33-001(d)
33-001(e)
33-002(a)
33-002(b)
33-002(c)
33-002(d)
33-002(e)
33-003(a)
33-003(b)
33-004(a)
33-004(b)
33-004(c)
33-004(d)
33-004(g)
33-004(h)
33-004(i)
33-004(j)
33-004(k)
33-004(m)
33-005(a)
33-005(b)
33-005(c)
33-006(a)
33-006(b)
33-007(a)
33-007(b)
33-007(c)
33-008(a)
33-008(b)
33-009
33-010(a)
33-010(b)
33-010(c)
33-010(d)
33-010(f)
33-010(g)
33-010(h)
33-011(a)
33-011(c)
33-011(d)
33-011(e)
33-012(a)
33-013
33-014
33-015
33-016
33-017 (50)

Technical Area 35

35-002
35-003(a)
35-003(b)
35-003(c)
35-003(d)
35-003(e)
35-003(f)
35-003(g)
35-003(h)
35-003(j)
35-003(k)
35-003(l)
35-003(m)
35-003(n)
35-003(o)
35-003(p)
35-003(q)
35-004(a)
35-004(b)
35-004(g)
35-004(h)
35-008
35-009(a)
35-009(b)
35-009(c)
35-009(d)
35-009(e)
35-010(a)
35-010(b)
35-010(c)
35-010(d)
35-013(a)
35-013(b)
35-013(c)
35-014(a)
35-014(b)
35-014(e)
35-014(g)
35-015(a)
35-015(b)
35-016(a)
35-016(c)
35-016(d)
35-016(i)
35-016(k)
35-016(m)
35-016(o)
35-016(p)
35-016(q) (49)

Technical Area 36

36-001
36-002
36-003(a)
36-003(b)
36-004(d)
36-005
36-006
C-36-003 (8)

Technical Area 39

39-001(a)
39-001(b)
39-002(a)
39-004(a)
39-004(b)
39-004(e)
39-005
39-006(a)
39-007(a)
39-008 (10)

Technical Area 40

40-001(b)
40-001(c)
40-004
40-005
40-006(a)
40-006(b)
40-006(c)
40-009
40-010 (9)

Technical Area 41

41-001
41-002(a)
41-002(b)
41-002(c) (4)

Technical Area 42

42-001(a)
42-001(b)
42-001(c)
42-002(b)
42-003 (5)

Technical Area 43

43-001(a)
43-002 (2)

Technical Area 45

45-001
45-002
45-003
45-003 (4)

Technical Area 46

46-002
46-003(a)
46-003(b)
46-003(c)
46-003(d)
46-003(e)
46-003(f)
46-003(g)
46-003(h)
46-004(a)
46-004(b)
46-004(c)
46-004(d)
46-004(e)
46-004(f)
46-004(g)
46-004(h)
46-004(a2)
46-004(b2)
46-004(c2)
46-004(d2)
46-004(m)
46-004(p)
46-004(q)
46-004(r)
46-004(s)
46-004(t)
46-004(u)
46-004(v)
46-004(w)
46-004(x)
46-004(y)
46-004(z)
46-005
46-006(a)
46-006(b)
46-006(c)
46-006(d)
46-006(f)
46-006(g)
46-007
46-008(a)
46-008(b)
46-008(d)
46-008(e)
46-008(f)
46-008(g)
46-009(a)
46-009(b)
46-010(d) (50)

Technical Area 48

48-002(a)
48-002(b)
48-003
48-004(a)
48-004(b)
48-004(c)
48-005
48-007(a)
48-007(b)
48-007(c)
48-007(d)
48-007(f)
48-010 (13)

Technical Area 49

49-001(a)
49-001(b)
49-001(c)
49-001(d)
49-001(e)
49-001(f)
49-001(g)
49-003
49-004
49-005(a)
49-006 (11)

Technical Area 50

50-002(a)
50-002(b)
50-002(c)
50-004(a)
50-004(b)
50-004(c)
50-006(a)
50-006(c)
50-006(d)
50-009
50-011(a) (11)

Technical Area 52

52-001(d)
52-002(a) (2)

Proposed Table A

Technical Area 53

53-001(a)
53-001(b)
53-002(a)
53-002(b)
53-005
53-006(b)
53-006(c)
53-006(d)
53-006(e)
53-006(f)
53-007(a) (11)

Technical Area 54

54-001(a)
54-004 (excluding Shaft No. 9)
54-005
54-006
54-007(a)
54-007(c)
54-012(b)
54-013(b)
54-014(b)
54-014(c)
54-014(d)
54-015(k)
54-017
54-018
54-019
54-020 (16)

Technical Area 55

55-008
55-009 (2)

Technical Area 60

60-002
60-005(a)
60-006(a)
60-007(a)
60-007(b) (5)

Technical Area 61

61-002
61-005
61-006
61-007 (4)

Technical Area 63

63-001(a)
63-001(b) (2)

Technical Area 69

69-001 (1)

Technical Area 73

73-001(a)
73-001(b)
73-001(c)
73-001(d)
73-002
73-004(a)
73-004(b)
73-004(c)
73-004(d)
73-005
73-006 (11)

Total SWMUs in Table A = 760

Proposed Table A.1
No Further Action SWMUs Removed from Table A
Through a Class III Permit Modification and Date of Removal

0-005	12-23-98	3-039(a)	12-23-98	15-014(l)		16-012(q)	12-23-98	39-006(b)	12-23-98
0-011(a)		3-043(e)	05-02-01	15-014(m)	12-23-98	16-012(r)	12-23-98	40-001(a)	12-23-98
0-011(e)		3-044(a)	05-02-01	16-005(i)	12-23-98	16-012(s)	12-23-98	40-003(a)	
0-016		6-003(g)		16-005(o)	12-23-98	16-012(t)	12-23-98	46-008(c)	12-23-98
0-033(a)		7-003(c)	12-23-98	16-006(b)	12-23-98	16-012(u)	12-23-98	50-001(a)	
1-001(h)	12-23-98	7-003(d)	12-23-98	16-006(f)	12-23-98	16-012(v)	12-23-98	52-001(a)	12-23-98
1-001(i)	12-23-98	8-003(b)	12-23-98	16-010(b)		16-012(w)	12-23-98	52-001(b)	12-23-98
1-001(j)	12-23-98	8-003(c)	12-23-98	16-010(c)		16-012(x)	12-23-98	52-001(c)	12-23-98
1-001(k)	12-23-98	8-005		16-010(d)		16-012(y)	12-23-98	52-002(b)	12-23-98
1-001(l)	12-23-98	8-006(b)	12-23-98	16-010(e)		16-012(z)	12-23-98	52-002(c)	12-23-98
1-001(m)		C-8-010		16-010(f)		18-007	05-02-01	52-002(d)	12-23-98
1-001(n)	12-23-98	8-007	12-23-98	16-010(g)	12-23-98	20-003(a)		52-002(e)	12-8-97
2-008(b)		9-003(c)	12-23-98	16-012(a)	12-23-98	21-005		52-002(f)	12-23-98
3-001(a)	12-23-98	9-003(f)	12-23-98	16-012(b)	12-23-98	21-012(a)	12-23-98	53-007(b)	12-23-98
3-001(b)	12-23-98	9-005(b)	12-23-98	16-012(c)	12-23-98	21-024(m)	12-23-98	54-001(c)	12-23-98
3-001(c)	12-23-98	9-005(c)	12-23-98	16-012(d)	12-23-98	21-027(b)	12-23-98	54-007(b)	05-02-01
3-002(b)	12-23-98	9-005(e)	12-23-98	16-012(e)	12-23-98	27-001	05-02-01	54-013(a)	12-23-98
3-009(b)	12-23-98	9-005(f)	12-23-98	16-012(f)	12-23-98	33-004(e)	12-23-98	54-015(h)	05-02-01
3-009(c)	05-02-01	9-005(h)	12-23-98	16-012(g)	12-23-98	33-004(f)	12-23-98	59-001	05-02-01
3-009(e)	12-23-98	9-007	12-23-98	16-012(h)	12-23-98	35-003(i)	12-23-98	61-004(a)	05-02-01
3-009(f)	12-23-98	11-011(c)	05-02-01	16-012(i)	12-23-98	35-004(e)	05-02-01		
3-009(g)	05-02-01	11-007	12-23-98	16-012(j)	12-23-98	35-006	05-02-01	SWMUs removed from Table A = 132	
3-009(h)	12-23-98	14-003		16-012(k)	12-23-98	35-011(a)	05-02-01		
3-012(a)	12-23-98	14-004(b)	12-23-98	16-012(l)	12-23-98	35-013(d)	05-02-01		
3-018	12-23-98	15-009(j)		16-012(m)	12-23-98	36-003(c)	12-23-98		
3-020(a)	12-23-98	15-010(e)		16-012(n)	12-23-98	39-003	12-23-98		
3-035(a)	12-23-98	15-012(a)		16-012(o)	12-23-98	39-004(c)			
3-035(b)	12-23-98	15-012(b)		16-012(p)	12-23-98	39-004(d)			

Proposed Table B Priority SWMUs*

SWMU Number				
1-001(a)	11-004(d)	16-007	21-011(g)	35-010(d)
1-001(b)	11-004(e)	16-008(b)	21-011(h)	36-003(a)
1-001(c)	11-005(a)	16-016	21-011(i)	36-003(b)
1-001(d)	11-005(b)	16-018	21-014	39-001(a)
1-001(e)	11-006(a)	16-019	21-015	39-001(b)
1-001(f)	13-004	16-020	21-016(a)	41-001
1-001(g)	15-002	16-021(a)	21-017(a)	46-002
1-001(m)	15-006(a)	18-001(a)	21-017(b)	46-006(a)
1-002	15-006(b)	18-003(a)	21-017(c)	46-006(b)
1-003(a)	15-006(c)	18-003(b)	21-018(a)	46-006(c)
2-005	15-006(d)	18-003(c)	21-018(b)	46-006(d)
2-008(a)	15-007(a)	18-003(d)	22-015(c)	46-007
3-010(a)	15-007(b)	18-003(e)	33-002(a)	49-001(a)
3-012(b)	15-007(c)	18-003(f)	33-002(b)	50-006(a)
3-013(a)	15-007(d)	18-003(g)	33-002(c)	50-006(c)
3-015	15-008(a)	18-003(h)	33-017	50-006(d)
3-029(a)	15-008(b)	21-006(a)	35-003(a)	50-009
5-005(a)	15-008(c)	21-006(b)	35-003(b)	54-004 (excluding Shaft No. 9)
6-007(a)	15-008(d)	21-006(c)	35-003(c)	54-005
8-003(a)	15-009(a)	21-006(d)	35-003(d)	60-005(a)
9-008(a)	15-009(b)	21-006(e)	35-003(e)	73-001(a)
9-008(b)	15-012(c)	21-010(a)	35-003(f)	
9-009	15-012(d)	21-010(b)	35-003(g)	
9-013	15-012(e)	21-010(c)	35-003(h)	Total SWMUs in Table B = 160
10-003(a)	15-012(f)	21-010(d)	35-003(j)	
10-003(b)	15-012(g)	21-010(e)	35-003(k)	
10-003(c)	16-001(b)	21-010(f)	35-003(l)	
10-003(d)	16-001(c)	21-010(g)	35-003(m)	
10-003(e)	16-001(d)	21-010(h)	35-003(n)	
10-003(f)	16-001(e)	21-011(a)	35-003(o)	
10-006	16-005(n)	21-011(b)	35-003(p)	
11-004(a)	16-006(a)	21-011(c)	35-003(q)	
11-004(b)	16-006(c)	21-011(d)	35-010(a)	
11-004(c)	16-006(d)	21-011(e)	35-010(b)	
	16-006(e)	21-011(f)	35-010(c)	

* As RFI work progresses, EPA may identify more SWMUs to be added to the list to be addressed in the installation work plans.

Proposed Table B.1
No Further Action SWMUs Removed from Table B
Through a Class III Permit Modification and Date of Removal

0-005	12-23-98	1-001(l)	12-23-98	8-003(c)	12-23-98	16-006(f)	12-23-98	36-003(c)	12-23-98
1-001(h)	12-23-98	1-001(n)	12-23-98	8-007	12-23-98	21-012(a)	12-23-98	54-015(h)	05-02-01
1-001(i)	12-23-98	3-012(a)	12-23-98	15-012(a)		35-003(i)	12-23-98		
1-001(j)	12-23-98	3-020(a)	12-23-98	15-012(b)		35-006	05-02-01	SWMUs removed from Table B = 19	
1-001(k)	12-23-98	8-003(b)	12-23-98	16-005(o)	12-23-98				

Proposed Table C

RFI Work Plan due July 7, 1994: Technical Area 16

16-005(a)
16-005(c)
16-005(d)
16-005(e)
16-005(h)
16-005(j)
16-005(k)
16-005(l)
16-005(m)
16-006(g)
16-006(h)
16-015(a)
16-015(b)
16-017
16-024(e)
16-025(a)
16-025(b)
16-025(b2)
16-025(c2)
16-025(d)
16-025(e)
16-025(f)
16-025(g)
16-025(h)
16-025(i)
16-025(j)
16-025(k)
16-025(l)
16-025(m)
16-025(n)
16-025(o)
16-025(p)
16-025(q)
16-025(r)
16-025(s)
16-025(t)
16-025(u)
16-025(v)
16-025(w)
16-025(x)
16-025(y)
16-025(z)
16-026(m)
16-026(n)
16-026(o)
16-026(p)
16-026(q)
16-026(s)
16-026(w)
16-028(a)
16-029(a2)
16-029(b2)
16-029(c2)
16-029(d2)
16-029(e2)
16-029(f2)
16-029(g2)
16-029(h2)
16-029(k)
16-029(l)
16-029(m)
16-029(n)
16-029(o)
16-029(p)
16-029(q)
16-029(r)
16-029(s)
16-029(t)
16-029(u)
16-029(v)
16-029(w)
16-029(x)
16-029(y)
16-029(z)
16-031(c)
16-031(d)
16-032(a)
16-032(c)
16-034(a)
16-034(b)
16-034(c)
16-034(d)
16-034(e)
16-034(f)
16-034(l)
16-034(m)
16-034(n)
16-034(o)
16-034(p)
C-16-025
C-16-026
Total SWMUs = 91*

RFI Work Plan due July 7, 1995: Technical Area 16

16-016(d)
16-016(e)
16-016(g)
16-025(a2)
16-025(d2)
16-026(a)
16-026(b2)
16-026(c2)
16-026(f)
16-026(g)
16-026(i)
16-026(j)
16-026(k2)
16-026(l)
16-026(r)
16-026(u)
16-026(y)
16-026(z)
16-028(b)
16-028(c)
16-028(d)
16-028(e)
16-029(h)
16-029(i)
16-029(j)
16-030(a)
16-030(c)
16-031(a)
16-031(b)
16-031(e)
16-031(f)
16-031(h)
16-034(h)
16-034(i)
16-034(j)
16-034(k)
Total SWMUs = 36

RFI Work Plan due May 21, 1995: Operable Unit 1114

3-009(i)
3-009(j)
3-011
3-021
3-025(b)
3-026(c)
3-029
3-031
3-034(a)
3-034(b)
3-043(c)
3-045(a)
3-045(b)
3-045(c)
3-045(e)
3-045(f)
3-045(g)
3-045(h)
3-049(a)
3-049(b)
3-049(e)
3-050(a)
3-050(d)
3-050(f)
3-050(g)
3-052(a)
3-052(e)
3-052(f)
3-054(a)
3-054(b)
3-054(c)
3-054(d)
3-054(e)
3-055(a)
3-055(c)
3-056(d)
3-056(l)
3-059
Total SWMUs = 38

* 20 additional SWMUs were added after work plan review

Proposed Table C.1
No Further Action SWMUs Removed from Table C
Through a Class III Permit Modification and Date of Removal

3-002(a)	05-02-01	3-046		16-006(i)	12-23-98	16-026(g2)		16-032(d)	12-23-98
3-002(d)	05-02-01	3-049(c)	05-02-01	16-025(c)	12-23-98	16-026(h)		16-032(e)	12-23-98
3-009(c)	05-02-01	3-049(d)	05-02-01	16-025(e2)		16-026(i2)	12-23-98	16-034(g)	12-23-98
3-019	05-02-01	3-050(e)	05-02-01	16-025(f2)		16-026(k)			
3-024	12-8-97	3-052(c)	05-02-01	16-025(g2)	12-23-98	16-026(t)		SWMUs removed from	
3-025(a)	05-02-01	3-055(d)	05-02-01	16-025(h2)		16-026(x)		Table C = 43	
3-026(b)	05-02-01	3-056(m)	05-02-01	16-026(a)		16-030(b)			
3-032	05-02-01	3-056(n)	05-02-01	16-026(d2)		16-030(e)			
3-045(d)	12-8-97	16-005(b)	05-02-01	16-026(e2)		16-030(f)			
3-045(i)	05-02-01	16-005(f)	12-23-98	16-026(f2)		16-031(g)	12-23-98		